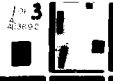
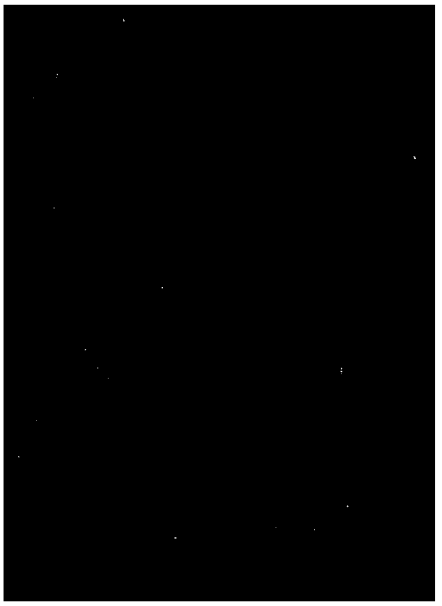
AD-A113 692 CACI INC-FEDERAL ARLINGTON VA F/G 15/7
WARTIME REQUIREMENTS FOR AMMUNITION, MATERIEL, AND PERSONNEL (W--ETC(U)
FEB 82 R G RHOADES MDA903-80-D-0668
UNCLASSIFIED CAA-D-81-2 NL





The findings of this report are not to be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation. Comments or suggestions should be addressed to:

Commander
US Army Concepts Analysis Agency
ATTN: CSCA-MCM
8120 Woodmont Avenue
Bethesda, Maryland 20014

3

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: CAA-D-81-2	2. GOVT ACCESSION NO. AD-A113 [illegible] / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): Wartime Requirements for Ammunition, Materiel and Personnel (WARRAMP), Volume IV, Ammunition Postprocessor Program Maintenance Manual	5. TYPE OF REPORT & PERIOD COVERED: Final: Sep 80 -- Feb 82 / 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Mr. Ronald G. Rhoades, CACI, Inc.	8. CONTRACT OR GRANT NUMBER(s): MDA 903-80-D-0668
9. PERFORMING ORGANIZATION NAME AND ADDRESS: CACI, Inc., 1815 North Fort Myer Drive, Arlington, VA 22209	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: US Army Concepts Analysis Agency, 8120 Woodmont Avenue, Bethesda, Maryland 20814	12. REPORT DATE: February 1982 / 13. NUMBER OF PAGES: 216
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report): UNCLASSIFIED / 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release: Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Accompanied by:
Wartime Requirements for Ammunition, Materiel and Personnel (WARRAMP), Volume III, Ammunition Post Processor User's Manual

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

FORTRAN	Ammunition	Logistics
SIMSCRIPT II.5	Equivalent Stylized Day	Expenditures
Concepts Evaluation Model	Report Generator	Weapon Type
COSAGE	Ammunition Buffer	Equipment Losses
WARRAMP	Combat Analysis	Tonnage

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This manual provides information on the programs processing and maintenance of the 3 computer software programs that comprise the Ammunition Postprocessor (APP) of the Wartime Requirements for Ammunition, Materiel and Personnel (WARRAMP) methodology. This manual provides a general overview of the methodology system followed by a programmer level discussion of each program. The discussion includes details on the description of processing, the operating environment and program maintenace procedures. Sample runstreams and program source code listings are included in this manual for the applications

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

20. ABSTRACT

on the UNIVAC 1100/82 installed at the US Army Concepts Analysis Agency.

DOCUMENTATION
CAA-D-81-2
AD

WARTIME REQUIREMENTS FOR AMMUNITION, MATERIEL, AND PERSONNEL (WARRAMP)

VOLUME IV

AMMUNITION POSTPROCESSOR PROGRAM MAINTENANCE MANUAL

(APP-PMM)

February 1982

PREPARED
FOR

U.S. ARMY CONCEPTS ANALYSIS AGENCY
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20014

BY

CACI, INC. - FEDERAL
1815 NORTH FORT MYER DRIVE
ARLINGTON, VIRGINIA 22209

CONTRACT MDA903-80-C-0668

THIS PAGE IS INTENTIONALLY LEFT BLANK

AMMUNITION POSTPROCESSOR
PROGRAM MAINTENANCE MANUAL

(APP-PMM)

CONTENTS

FIGURES

SECTION I

GENERAL

1. PURPOSE: The purpose of this program maintenance manual is to describe the APP system in sufficient level of detail to enable those persons responsible for the APP software, it's maintenance and modification, to effectively and efficiently perform these functions. It is also the purpose to be in compliance with Department of the Army and USACAA directives in the documentation of computer software (reference items F, H, I).

   Documentation for each of the three APP computer programs includes a description, purpose, and organization of the utility, a logic flow chart, the source code listing, and examples of the input and output data files. Included is a data variable dictionary, a discussion of the environment in which the utility operates and the maintenance procedures to be followed.

2. STANDARDS: The three programs that constitute the Ammunition Postprocessor are implemented in two programming languages as follows:

   AMMUNITION BUFFER PROGRAM - FORTRAN IV
   EQUIVALENT STYLIZED DAY PROGRAM - SIMSCRIPT II.5
   REPORT GENERATOR PROGRAM - FORTRAN IV

   The UNIVAC Publication, UP4060 provides the reference in the FORTRAN IV implementation. Reference items S, T and U should be refered to for the SIMSCRIPT II.5 implementation.

2.1 OPERATING SYSTEM: These programs are executed and maintained on the UNIVAC EXECUTIVE - 8 operating system (OS) installed on the UNIVAC 1100/82 computer system at the USA Concepts Analysis Agency.

2.2 PROGRAM COMPILATION: The operating system library (SYSLIB) contains the compilers used to produce the object code. The Executive - 8 commands to call the compilers are as follows:

FORTRAN IV	@FOR, options SI, RO
SIMSCRIPT II.5	@SIM25, options SI, RO

   The language references contain the specific compiler options, re-compilation procedures and compiler error diagnostics. In the notation above, SI refers to the source code input file-name, element-name. RO refers to the relocatable object code program elements and file-name.

3. PROJECT REFERENCES: project references can be found in Appendix A. This documentation effort was achieved through contractor support to USACAA, by CACI, Inc., under contract MDA903-80-D-0668. The Contracting Officers Technical Representative (COTR) was Mr. Hugh Jones, Models Group, Msethodology and Computer Support Directorate, USACAA. This manual is one of a series to document the WARRAMP Methodology's

computer software. Volume I of the series contains the user's portion of the instructions of this software.

4. TERMS and ABBREVIATIONS: Terms and abbreviations are used throughout to facilitate communications of sets of words (acronyms) and analytical expressions common to the methodology and mililtary operations research. A complete listing may be found in Appendix B of this manual. In addition, the full statement of the expression followed by the acronym or term in closed parenthesis is used throughout the manual on the first occurence of its use.

SECTION II

SYSTEM DESCRIPTION

1. GENERAL DESCRIPTION: The WARRAMP Ammunition Postprocessor is the ammunition portion of the WARRAMP analytical methodology. It exists to merge and organize (buffer) combat equipment loss and ammunition expenditure data from historical sources and the combat simulation modeling sources. Once buffered computations are performed to produce the equivalent stylized day values, this is then followed by the computation of ammunition expenditures in a rate form. The produced expenditure rate supports the US Army's operations and planning functions and the budgeting process. As such, the programs documented herein are unique and have the sole application of supporting the WARRAMP methodology. The relationships of the APP function to WARRAMP are depicted in Figure II.1.1. The APP major components are highlighted with a heavy border.

2. SECURITY and PRIVACY: The individual software components (programs) are cataloged as indicated under the detailed descriptions for each program. In each case, they are cataloged in the public mode for user access. User's are asked not to modify or edit (write) in the program files. In the event that alteration is required for a specific purpose, a potential user should copy the program to a file under his/her user identification, and then edit the file as desired. In event of error detection during use, the user is requested to note the error by program line and forward the proposed correction to the program custodian, so that the record program may be updated. Test (sample) data, either input or output and the programs contained herein are unclassified. User's must apply the appropriate security classifications to their data files and are responsible for the safeguard of printed matter accordingly. User's and programmer personnel are directed to the installation computer user's guide for the appropriate classification levels. Throughout the manual, reference is made to classified data files. The reference is made to the file content, not the classified file qualifier.

   The evolution of the WARRAMP methodology has necessitated changes in the APP software. This documentation supports and facilitates such change. It is incumbent on the program custodian to verify and validate changes made to the record versions of the programs and disseminate changes to this manual.

3. SYSTEM APPLICATION: Sections I and II of the APP User's Manual (Volume III of the WARRAMP documentation set) provides a comprehensive description of the Ammunition Postprocessor methodology as it relates to WARRAMP. The relationships of the APP utility programs are presented in Figure II.3.1. The APP processes are interrelated as depicted in the figures; the output of one program becomes the input to another program. The APP data flow is presented in Figure II.3.2 and assists in understanding the APP processes. The specific functions of the APP utility programs are addressed in Section III under individual chapters by utility program.

WARRAMP OVERVIEW

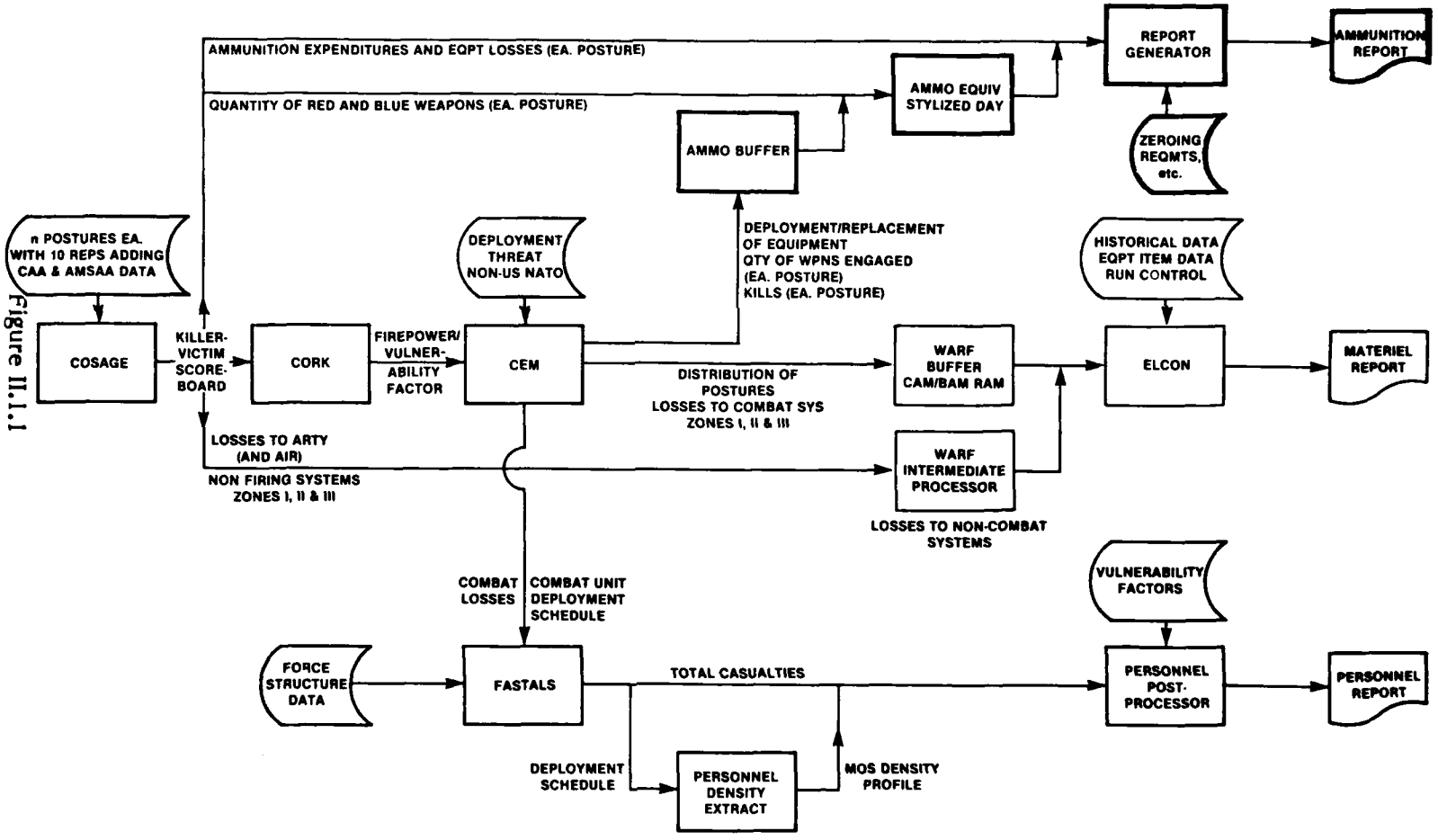


Figure II.1.1

AMMUNITION POSTPROCESSOR SYSTEM

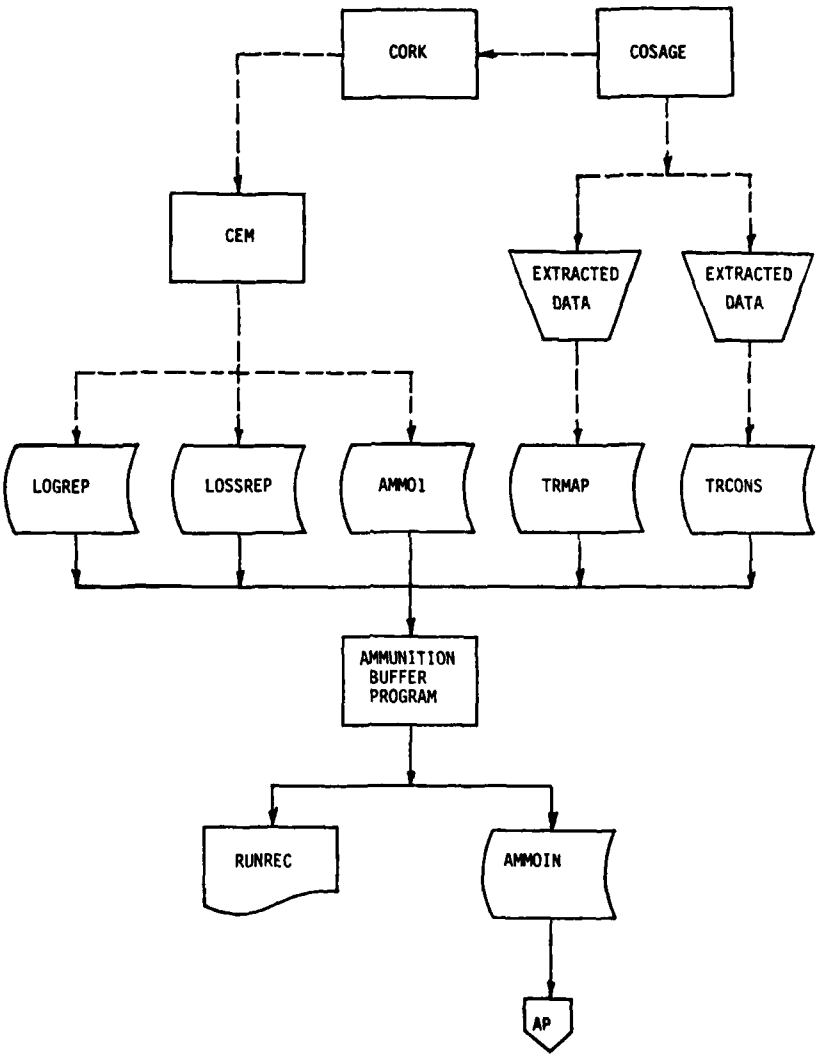


Figure II.3.1

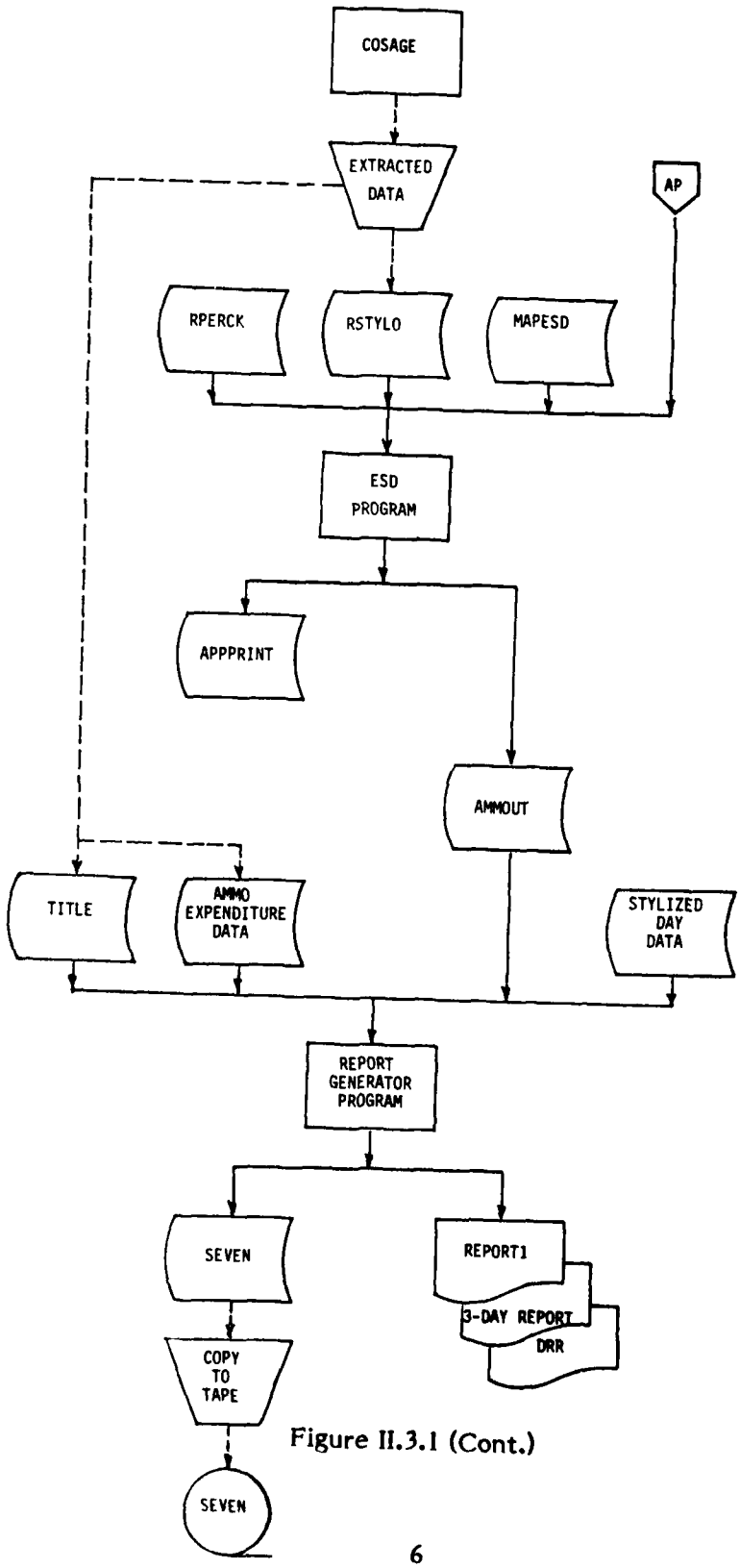


Figure II.3.1 (Cont.)

FILES	*LOSSREP	*LOGREP	*AMMOI	*TRMAPSS	*TRMCONS	*TAMOIN	*MAPESD	*RPERCK	*RSTYLO	*APPRINT	*AMPUT	P.ISD	PF.DATA	*TLE	*REPORTI	*DRR	*3DRAYRPT	*SEVEN
PROGRAMS																		
CEM	O	O	O															
COSAGE				O	O			O	O				O	O				
AMMO BUFFER	I	I	I	I	I	O												
ESD						I	I	I	I	O	O							
REPORT											I	I	I	I	O	O	O	O

APP INPUT/OUTPUT SUMMARY

Figure II.3.2

THIS PAGE IS INTENTIONALLY LEFT BLANK

SECTION III

Chapter 1

THE AMMUNITION BUFFER PROGRAM

1.1 DESCRIPTION OF PROCESSING: The Ammunition Buffer program consists of two routines. The program driver entitled CEMRDLOG, is labeled as to its function which is to read the theater cycle CEM logistics report. It then calls, within a double DO-LOOP, the subroutine entitled CEMLOS which is labeled as to its function, and reads the daily CEM loss data. The source code files are liberally commented for ease of understanding; the CEMRDLOG routine has approximately 170 lines of executable code and the (CEMRDLOS) CEMLOS subroutine has approximately 180 lines of executable source code. In addition to the read and write functions, numerous computations are performed in both routines to produce the output data.

1.1.1 PURPOSE/FUNCTIONS: The Ammunition Buffer (buffer) program is designed to read three data files produced by the Concepts Evaluation Model (CEM) and two manually produced data files. In the course of reading the CEM data files LOGREP and LOSSREP, it searches for selected data by key word identification and location, sequentially. The remaining three files are read sequentially in their entirety. The title alludes to the purpose of the program, that is, to buffer the data coming from the two key combat models. CEM and the Combat Sample Generator (COSAGE). Consequently, it reads data, sums values, equivalences, computes (factors) values and writes the output data for the ensuing programs to utilize.

1.1.2 PROGRAM INPUT/OUTPUT STRUCTURE: The program I/O structure is presented in Figure III.1.1. The internal integer value indicates the initial order of input for the input data files. The integer outside the flow chart symbol at the upper left is the logical unit assigned to the input and output data files by the program run (Start file) stream and is expected by the program.

1.1.2.A INPUT DATA and DATA BASE: The five input data files are not part of a formal database organization. The files produced by CEM are provided to the user/analyst in the course of the study program progress, and the two manually developed files are maintained by the user analyst and updated in the course of the study program to provide current data. It is incumbant on the user/analyst to properly catalog and maintain the input data files. Likewise the user/analyst must be consulted for the cataloged file name and element name of the current data files. A version name may be appended to the element name to assist in providing a data audit trail and distinguish the current file. The CEM produced data files are lengthy and only a sample of the file is reproduced here in the interest of brevity. The formats of the data read is given in Volume III of this documentation set, Chapter 1. Those discussed in that volume are not duplicated here. Below is a summary of the input data files.

- TRMAPS - The file is maintained on the system in a user designated mass storage device as a file element under a user specified program file. During program execution, it is edited to temporary file labeled logical unit (12), to be used as input to the program. It's name alludes to it's function, that is to provide mapping data to the overall program. It is short, 27 records in length, but the data provided in records 2 and 3 is significant for data reading. This data is alphanumeric charactors used by the program in logic tests to determine record location in the program read of the CEM LOGREP and LOSSPEP data files. Likewise the data on records 4 - 7 is input as alphanumeric, though presented as integer to enable the program to read, and perform logic tests on the LOGREP and LOSSREP data files. These values are the modeled theater cycles (TC). The sample TRMAPS data file is presented in Figure III.1.2.

- TRCONS - The file is maintained on the system in a user designated mass storage device as a file element in a user specified program file. During the program execution, it is edited to a temporary file, labeled for the logical unit (11), to be used as input to the program. Its name alludes to the data purpose, which is to provide controlling data for the equivalent stylized day computations in the ESD program. In this (Buffer) program the data is read and then written out to unit 7, the AMMOIN file which is eventually passed to the ESD program. The data values are the stylized quantities of each equipment type (record) played or modeled for each combat sample (column) (4 samples = 1 set) of the set. The example TRCONS file is presented in Figure III.1.3.

- LOGREP - This file is maintained on the system as a program (print) file by the user/analyst. This file placement is normally the result of the user editing and partitioning the CEM output which is generally on tape at the conclusion of a CEM run. The file resides on a user designated mass storage device. During the program execution the file is referenced to logical unit 10 via the @USE command in the runstream in preparation for input to the program. The file name alludes to the logistics data contained within it. However, not all data is utilized and the file is lengthy. The alphanumeric data input in the file TRMAPS provides logic comparison background data for the program's record by record search.

  The initial reading using the sample data in Figure III.1.4 of this file is as follows:

  1) Records are advanced through DO-loops or go-to's until the "BLUE" and "MARY" from the caption "BLUE FORCE THEATERWIDE LOGISTIC SUMMARY" are found via logic tests of alphanumerics.

  2) Records are advanced through DO-loops or go-to's until the "PE" from the record caption "PERSNL" is identified via logic tests.

3) An advance to the next record is made (for blue) and the values of the record are read beginning with the 1 (for type of personnel (crew member) accross the record; twelve real values are read and stored in a temporary array called DATA12(I).

o LOSSREP - This file is maintained on the system as a program (print) file by the user/analyst. Like the LOGREP, the file placement is normally the result of the user editing and partitioning the CEM output, which is generally on tape at the conclusion of the CEM run. The file resides on a user designated mass storage device. During the program execution this file is referenced to logical unit 15 via the @USE command, in the runstream in preparation for input to the program. The file name alludes to the type of data in it; loss data for each day modeled in the theater campaign. An example of this data is in Figure III.1.5; the report for each day has four sections, a TOTAL section, and PART 1, PART 2 and PART 3 sections. Not all data present in the file is read or used. A record by record search is made until programed logic tests are satisfied, after which selected data are read and stored in arrays for subsequent computations.

The initial reading of the sample data presented in Figure III.1.5, by the program, would proceed as follows:

1) Records are advanced in the CEMLOS routine through a go-to statement until the "LOSSES" in the caption "LOSSES DURING DAY 1" is read and a logic test satisfied.

2) The value of "Day", an integer variable is read from the buffer (the record read above is held in the buffer); in this case it is set to the integer 1, or day 1.

3) If the value of "Day" is equal to the day counter in the program the next record is read and controlled with go-to statements until it advances two records and reads the "BLUE TOTAL" caption.

4) The program then advances records until the "RED CATEGORY CAUSING LOSS" is read, satisfying a logic test.

5) The program then advances through the data file records until the "TAN" of the "TANKS (PERM)" caption is read, satisfying a logic test.

6) At this position in the file the variable CASTAK is read and set to the real value 169.83, under the "tank" column and the variable TOTTAK is read and set to the value 419.15, under the "Total" column as result of a read of the buffer (again the buffer is holding the contents of the record read in 5 above).

7) The program advances a record and reads two selected items of data, setting the variable CSTTAK to 103.96 from the "Tank" column and the variable TTTTAK to 285.25 from the "Total" column.

- o AMMO1 - This file is maintained on the system as a program (PRINTS) file by the user/analyst. Like the other CEM produced files, the file placement is normally the result of the user editing and partitioning the CEM output, which may be on tape at the conclusion of a CEM run. The file resides on a user designated mass storage device. During the program execution, this file is referenced to logical unit 14 via the @USE command in the execution runstream in preparation for input to the program. This file contains ammunition expenditure data (hence the name) in the form of quantities of equipment engaged and hit. This data is used computationally in the program and partitioned into K-kills and M-kills. An example of the AMMO1 data is depicted in Figure III.1.5.

1.1.2.B OUTPUT DATA and DATA FILES: The execution of the Buffer produces two output files for the user in addition to the program execution information from the runstream (TPF$).

- o AMMOIN - The **AMMOIN data file is the major product of the program execution. It is assigned temporarily in the execution runstream to logical unit 7 with a reserved space of 1000 tracks on a system designated mass storage device. At the conclusion of the runstream execution it is edited into a permanently cataloged user program file. The records and formats of this file is discussed in Volume III, Chapter 1 of this documentation set. A sample of the file is presented in Figure III.1.7.

- o RUNREC - An example of the breakpointed output file RUNREC is depicted in Figure III.1.8. The file is not sent to the printer in the execution runstream, but is retained in a permanent cataloged file for reference as required by the analyst.

1.1.2.C VARIABLE DICTIONARY: The following variables are employed in the program.

Name	Definition
BLCMAM(I)	A one-dimensional integer array employed to map the Blue CEM weapon mumbers into the APP format, reserved as 30.
BWPLYD	An integer counter to count the number of Blue weapon types deployed in the force array.
CAT	An integer variable denoting weapon category for program logic tests. The values of the variable may be: 1 = personnel (PERS) 2 = tanks (TANK) 3 = light armored vehicles (APCS)

	4 = helicopters (HELO)
	5 = Anti-tank and Mortor weapons (AT/M)
	6 = artillery weapon systems (ARTY)
DATA12(I)	A one - dimensional real array employed in the programed reading of the logistic report reserved as 12 when twelve values per line are expected.
CASAPC	A real variable used in the program set to the daily "casualty" level or quantity of armored personnel losses.
CASCPE	A real variable, set in the program to the daily "casualty" level or quantity of armored vehicle crew (total) personnel losses.
CASNPE	A real variable, set in the program to the daily "casualty" level or total quantity of personnel (non-crew) losses.
CASTAK	A real variable, set in the program to the daily "casualty level or total quantity of permanent tank losses.
CSTAPC	A real variable, set in the program to the daily "casualty" level or total quantity of temporary armored personnel vehicle losses.
CSTTAK	A real variable, set in the program to the daily "casualty" level or total quantity of temporary tank losses.
DAY	An integer variable, set in the program to the day of combat modeled as read from the loss report.
DC	A common integer variable used as a counter for the day of combat modeled.
DATA15(I)	A one-dimensional real array employed in the programed reading of the logistic report when fifteen values per line are expected; reserved as 15.
DEPLOY (I,J,K,L)	A four-dimensional real array (matrix) used to hold the deployed weapon data by type, category, side and theater cycle; 12 by 6 by 2 by 45.
DEPOLD (I,J)	A two-dimensional real array used to hold the "old" or previous theater cycle deployed weapon data by type and category; 12 by 6.

HYTYPE (I,J)	A two-dimensional integer array used to contain, or is set to the highest "type" by quantity of weapons deployed for each side; 6 by 2.
ISIDE	An integer variable used to denote a forces side, where: 1 = Blue force 2 = Red force
KEH	An integer variable used in the program text for the combat classifications: 1 = Engaged 2 = K, or catastrophic kill (loss) 3 = M, or mobility kill (loss)
LINID	An alphanumeric variable set in the program to read the first four charactors of an input record.
LINIF(I)	An alphanumeric, one-dimensional array employed in the program to read a record of data and through logic tests, determine the location of the record pointer in an input file. Reserved as 22.
LOSTPK (I,J,K,L)	A common, four-dimensional, real array employed in the program, denoting the ration of K-kill to total combat losses for each equipment by type, category, side and theater cycle. Reserved 12 by 6 by 2 by 45.
LRCSTK	A real variable set in the program to the ration of daily permanent to total losses of red side tanks.
LRCSIA	A real variable set in the program to the ratio of daily permanent to total losses of red side combat vehicles and armored personnel carriers.
LRCSAR	A real variable set in the program to the ratio of daily permanent to total losses of all red armored vehicles; includes tanks, APC's, ICV's, etc.

LRCSPE	A real variable set in the program to the ratio of daily permanent to total losses of red combat pesonnel.
NCEMWP(I)	A one-dimensional, integer array, set to the number of CEM weapon types for each side.
NGAG	A integer variable used in the program and set to the engagement under evaluation, a value from 1 to 8. Historically the engagement types have been: 1 = Blue attacking Red delay force. 2 = Blue attacking Red prepared defense. 3 = Blue attacking Red hasty defense. 4 = Blue - Red meeting engagement. 5 = Red attacking Blue hasty defense. 6 = Red attacking Blue prepared defense. 7 = Red attacking Blue delay force. 8 = Inactive, Defense light or static.
NODAYS	An integer variable computed to be the value of TRMAX times 4, which is the number of days of combat modeled.
NOS(I)	A one-dimensional integer array that contains the following values: NOS(1) = total blue weapons modeled NOS(2) = total number of red weapons modeled. NOS(3) = total number of combat samples NOS(4) = total number of equivalent stylized days of combat. NOS(5) = number of engagements modeled.
NM1(I)	A one-dimensional alphanumeric used to read in characters in groups of 2; reserved as 6 and used in logic tests. Contains the descriptors for each of the 6 weapon categories.

NM2(I)

A one-dimensional alphanumeric array used to read in characters in groups of 6 which contains the descriptors of each of the 6 weapon categories. Used in logic tests and output labels. Reserved as 6.

NM3 (I)

A one-dimensional alphanumeric array used to read in characters in groups of 6, reserved as 44. Within the program values is stored in the array, related to the data for each cycle.

NUMTYP (I, J)

A two-dimensional integer array that holds the number of weapons types in each category by side; 6 by 2.

PLDYSY (I, J, K)

A common, three-dimensional integer array that is set to the status of each weapon type, in each category by side; 12 by 6, by 2. The values used are:

1 = modeled weapon type

0 = weapon type not modeled for category 3 (light armor); on the Red side these values may be found:

1 = Red APC modeled

0 = Weapon type not modeled

9 = Red ICV modeled

RATIOB (I)

A one-dimensional real array that is set to the computed ratio of personnel engaged to the total for the blue side in each combat engagement sample; reserved as 8.

RATIOR(I)

A one-dimensional real array set to the computed ratio of personnel engaged to the total for the red side in each combat engagement sample; reserved as 8.

RDAMCM (I)

A one-dimensional integer array utilized to hold the Red side AMMO weapon numbers and map them into the CEM weapon numbers (merge or equivalence); reserved as 40.

RDCMAM (I)

A one-dimensional integer array utilized to hold the red side CEM weapon numbers and map or equivalence them with the AMMO weapon numbers. Reserved as 40.

REPLEP (I, J, K, L)	A four dimensional real array that is set to the quantity of weapons replacements made from the theater pool for each type weapon, category, side and theater cycle. Reserved as 12 by 6, 2 by 215.
REPLIP (I, J, K, L)	A four dimensional real array that is set to the quantity of weapons replacements made from the General Support maintenance to the theater pool for each weapon type, category, side and theater cycle. Reserved as 12 by 6 by 2 by 45. Not used in the program.
RID (I, J, K, L)	A four dimensional real array that is set to the quantity of weapons (returned) to duty from direct support maintenance, general support maintenance and the theater pool for each weapon, category, side and theater cycle. Reserved as 12 by 6 by 2 by 45.
RWPLYD	An integer variable set to the number of red weapon systems played (modeled).
STYLZD (I)	A one-dimensional integer array set used to read/write the quantities of weapons per stylized sample. Reserved as 9, the normal number of samples is 4.
SUMAPB (I, J, K)	A three dimensional real array that holds the daily sum of blue APC's in each of the three factors groups (engaged, K-kill, M-kill) by the APC type and engagement on CEM sample (8). Reserved as 3 by 12 by 8.
SUMMER (I, J, K)	A three dimensional real array that holds the daily sum of red helicopters in each of the three factor groups (engaged, K-kill, M-kill) by helicopter type and engagement or CEM sample. Reserved as 3 by 5 by 8.
SUMPEB (I, J, K)	A three dimensional real array that holds the daily sum of blue personnel in each of the three factor classes (engaged, K-kill, M-kill) by engagement type (CEM sample), reserved as 3 by 1 by 8.
SUMPER (I, J, K)	A three dimensional real array that holds the daily sum of red personnel in each of the three factor classes (engaged, K-kill, M-kill) by engagement type (CEM sample), reserved as 3 by 1 by 8.

SUMTKB (I, J, K)	A three dimensional real array that holds the daily sum of blue tanks by type in each of the three factor classes (engaged, K-kill, M-kill) by engagement type or CEM sample. Reserved as 3 by 12 by 8.
SUMAPR (I, J, K)	A three dimensional real array that holds the daily sum of red APC's by type in each of the three factor classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 12 by 8.
SUMARB (I, J, K)	A three dimensional real array that holds the daily sum of blue artillery by type in each of the three factor classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 8 by 8.
SUMARR (I, J, K)	A three dimensional real array that is set to the daily sum of red artillery by type in each of the three factor classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 8 by 8.
SUMATB (I, J, K)	A three dimensional real array that is set to the daily sum of blue anti-tank or mortor systems by type in each of the three classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 52 by 8.
SUMATR (I, J, K)	A three dimensional real array that is set to the daily sum of red anti-tank or mortor systems by type in each of the three classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 52 by 8.
SUMHEB (I, J, K)	A three dimensional real array that is set to the daily sum of blue helicopters by type in each of the three classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 5 by 8.
SUMTKR (I, J, K)	A three dimensional real array that is set to the daily sum of red tanks by type in each of the three factor classes (engaged, K-kill, M-kill) by engagement or CEM sample. Reserved as 3 by 5 by 8.
SUMREP (I)	A one-dimensional real array that is set to the sum of red personnel lost to all causes in each engagement or CEM sample. Reserved as 8.

SUMRTN (I)	A one-dimensional real array set to the sum of red tanks of all types lost to all causes in each engagement or CEM sample. Reserved as 8.
SUMRIC (I)	A one dimensional real array set to the sum or red ICV's of all types lost to all causes in each engagement or CEM sample. Reserved as 8.
SUMRAP (I)	A one dimensional real array set to the sum of red APC's of all types, lost to all causes in each engagement type. Reserved as 8.
SUMRIA (I)	A one dimensional real array set to the sum of red ICV/APC's of all types, lost to all causes in each engagement type. Reserved as 8.
SUMRAR (I)	A one dimensional real array set to the sum of red tanks of all types lost to all causes in each engagement type or CEM sample. Reserved as 8.
SURVAS (I, J, K, L)	A four dimensional real array that is set to the quantity of weapons surviving (assets) for each type, category, side and theater cycle. Reserved as 12 by 6 by 2 by 45.
TC	A common integer variable set to the value of the theater cycle, varies from initial value of 1 to 45.
TP	An integer variable set to the value of type weapon as an index in Do-loops.
TRMAX	An integer variable, common, set on input to maximum quantity of theater cycles modeled - usally 45.
THREPL (I, J, K, L)	A four dimensional real array set to quantity of weapons systems, by type replaced in the theater for each side in each theater cycle; reserved as 12 by 6 by 2 by 45.
TOTAPC	A real variable set to the total daily red APC (all types) permanent losses.
TOTCPE	A real variable set to the total daily crew personnel losses.
TOTNPE	A real variable set to the total daily non-crewmember personnel losses.

TOTTAK	A real variable set to the total daily red tank (all types) permanent (K-kill) losses.
TTTTAK	A real variable set to the total daily red tank (all types) temporary (M-kill) losses.
TTTAPC	A real variable set to the total daily red APC (all types) temporary (M-kill) losses.

1.1.3 PROGRAM PROCESSING: The CEMRDLOG routine is the program driver and calls the subroutine CEMRDLOSS for daily data; assuming the normal modeling of a 180 day war, 180 calls will be made to the subroutine. There are 6 common variables and arrays to the program to allow access by both CEMRDLOG and CEMRDLOSS, all other variables are local to the routines. These common variables are:

LOSTPK (12, 6, 2, 45)
TRMAX
DC
TC
SURVAS (12, 6, 2, 45)
PLSTAT (12, 6, 2)

The high level program features are depicted in Figure III.1.9.

1.1.3.A PROGRAM RUN DESCRIPTION: The procedure or "START" file to execute the Buffer program is depicted and discussed in Volume III, Chapter 1 of this documentation set. The object program and source code resides in permanently cataloged program file elements under the current user/analyst's user identification number. The execution runstream is designed to be submitted as a batch run to the system. The submission is normally made in the demand mode from a computer terminal. During the program execution, all input data and computations are written out to either the execution runstream (Unit 6) to be captured in the breakpointed file or the output file, AMMOIN (Unit 7). The maintenance programmer or analyst can trace the flow of execution through this medium.

1.1.3.B PROGRAM LOGIC: The program is flow charted in Figures III.1.10 (CEMRDLOG) and Figure III.1.11 (CEMRDLOS). The source (symbolic) code is depicted in Figures III.1.12 (CEMRDLOG) and Figure III.1.13 (CEMRDLOS).

1.1.3.C PROCESSING FEATURES: The Buffer program performs the following instructions:

- o Initializes the program CEMRDLOG
- o Reads/writes the TRMAPS data and counts weapons
- o For each theater cycle reads the LOGREP, part 1, surviving assets data

- o For each theater cycle reads the LOGREP, part 2, deployed, replacement, returned to duty data.
- o Computes the LOSTPK values.
- o Maps CEM weapon system (equipment) numbers to APP system numbers.
- o Reads/writes the TRCONS (stylized quantity) data.
- o Computes daily quantities (cycle quantities divided by 4).
- o Partitions the weapon systems data into direct support and general support quantities.
- o For each day, calls the CEMLOS subroutine to:
  - oo Read the LOSSREP daily data.
  - oo Computes ratios of permanent losses.
  - oo Computes the daily K-kills and M-kills.
  - oo Computes the daily red loss totals.
  - oo Separates close air support losses from other red losses.
  - oo Writes out the computed data.
  - oo Returns control to CEMROLOG.
- o Writes out data for the next call to the subroutine CEMLOS.

1.2 OPERATING ENVIRONMENT: The Buffer program is implemented on the USACAA UNIVAC 1100/82 computer. The program is submitted in a demand mode and is processed in a batch environment for efficient use of resources. It requires approximately 3.5 minutes of CPU time for execution. The program is developed under the UNIVAC architecture (36 bit) and requires approximately 55,000 words (36 - bit) of main core memory for execution.

1.2.1 HARDWARE: The UNIVAC 1100/82 mainframe and peripheral devices supports the program execution. The fixed or removable disk (on-line) storage requirements are as follows:

UNIT 7 - 1000 tracks

UNIT 8 - 1000 tracks

UNIT 10 - 1000 tracks

UNIT 11 - default, 128 tracks

UNIT 12 - default, 128 tracks

UNIT 14 - 1000 tracks

UNIT 15 - 1000 tracks

Tape processing is not a part of the program execution. A (user) computer terminal to the system is required. A printer is employed for a hard copy of the output. Normally the operating system executive directs the assignment of the mass storage (disk) devices.

1.2.2 SUPPORT SOFTWARE: The program compilation and execution requires the following system processors:

@FOR - The FORTRAN language processor.

@MAP - The MAP processor or collector to form the executable program from the relocatable object code.

@ED - The system editor processor

1.2.2.A OPERATING SYSTEM: The program was developed and implemented on the UNIVAC 1100/82 operating system. The features of the EXECUTIVE - 8 control language and the standard system library (SYS$LIB and (SYS$RLIB$) provide the essential support.

1.2.2.B COMPILER: The operating system library contains the FORTRAN IV compiler and is accessed by the EXECUTIVE - 8 command @FOR.

1.2.3 DATA BASE: The data base and files necessary for program execution were discussed in paragraph 1.1.2.A. These files are all FIELDDATA and in System Data Format. These files exist as user/analyst cataloged files and elements and are not part of a formal data base structure.

1.3 MAINTENANCE PROCEDURES: The relative size of the Buffer program minimizes the maintenance. The maintenance extends to insuring that a copy of the symbolic code is preserved (on tape or cards), that page by page changes are made to this documentation as changes/maintenance is performed, and that the symobolic code be annotated with comments to insure that future programmers can track the changes. The following information is pertinent to the program maintenance (space provided for notes):

Source (symbolic) code Filename.Elementname:

Absolute (object) code Filename.Element name:

Space Required, source code:

Space Required, absolute code:
Archived tape label, location:

Read/write keys; established by current custodian, name:

1.3.1 PROGRAMMING CONVENTIONS: The program follows standard FORTRAN techniques. High lights are as follows:

- o The program symbolic elements are liberally commented for the functional characteristics.
- o All format statements are declared at the beginning of the program.
- o Implied do-loops are used.
- o Variable definitions are given as commented records at the beginning of the program.

1.3.2 VERIFICATION PROCEDURES: This program is verified by performing test execution runs of the program followed by hand calculation, and comparisons of the results. The sequence of execution is tracked by reviewing the two output files.

1.3.3 ERROR CORRECTION PROCEDURES: The program does not employ any programmed debugging aids or calls to an "error - found" subroutine.

Debugging and error correction is accomplished by an examination of the output. Three types of errors that may occur are:

- o Data (input) errors -- data presented in a mode (integer or real alphanumeric) other than expected by the program may cause an error, which may be presented as a system error.

  Data presented in excess of the reserved arrays may induce an error. Debugging of data must be accomplished by a visual examination of the data files (print copy or at the terminal) or tracing the progress via the output files.

- o Program error - program errors are resolved by checking the compilation listing and obtaining and examining a relocatable code listing after the program collection (@MAP) to insure that all references and call addresses are resolved. A post mortum dump may be produced by using the @PMD Executive - 8 command in the runstream and then examining the contents of the instruction (I - BANK) bank and data (D - BANK) bank.

- o System error - the run output file (TPF$) will list the system diagnosed errors for subsequent tracing and correction. These errors often occur as result of an error in the runstream.

1.3.4 SPECIAL MAINTENANCE PROCEDURES: No special maintenance procedures are developed or required for this program.

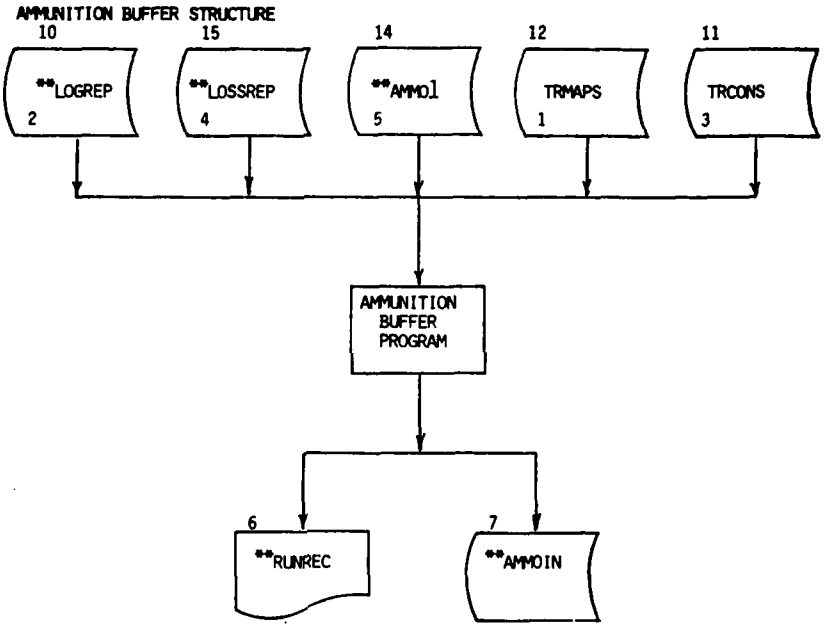


Figure III.1.1

```
UNCLASSIFIED>>7ESDGEN(1),TRMAPS/18JUL80
  1        2
  2          PE  TN  AP  HE  AT  AR
  3       PERSNLTANK  APC   HELO  AT/M  ARTY
  4           2       3       4       5       6       7       8       9      10      11      12
  5          13      14      15      16      17      18      19      20      21      22      23
  6          24      25      26      27      28      29      30      31      32      33      34
  7          35      36      37      38      39      40      41      42      43      44      45
  8        1  12  12   5  12   8
  9        1  12  12   5  12   8
 10        1
 11        1   1   0   1   1   1   1   1   1   1   1   0
 12        1   1   1   1   1   1   1   1   1   1   1   1
 13        1   1   1   1   1
 14        1   1   1   0   1   1   1   1   1   1   1   0
 15        0   1   1   1   1   1   1   1
 16        1
 17        1   1   1   1   1   1   1   0   0   0   0   0
 18        1   1   9   9   9   0   1   1   1   1   1   1
 19        1   0   0   0   0
 20        1   1   1   1   1   1   1   1   0   1   1   1   1
 21        1   1   1   1   1   1   1   1
 22       39   6   4  40   8
 23        1   3   2   2  99   5  29  26  99  14  99  16  15  14  99
 24       37  38  39  99  99  30  99  99  99  99  99  99  99  99  99
 25     1  2  3
 26     4  5  6
 27     1  2  3  4  5  6
```

Figure III.1.2

UNCLASSIFIED 37 ESDGENTI, TR CONS/18JUL80				
1	21109	23180	46294	91839
2	58	60	135	286
3	162	64	142	301
4	179	184	412	875
5	9	10	22	45
6	117	180	273	720
7	41	41	102	304
8	40	43	100	212
9	176	193	446	916
10	336	370	860	1756
11	57	63	146	316
12	6	6	6	18
13	90	108	216	432
14	36	44	91	180
15	14	18	36	72

Figure III.1.3

)3KOREA8%<RUNSEC/KOREA87-85 8C 86MAY88 *UNCLASSIFIED*

BLUE FORCE THEATERRIOR LOGISTIC SUMMARY AT END OF THEATER CYCLE 1

THEATER RESRCES	RESOURCES ON HAND: COMBAT UNITS	THEATER STOCKS	IN REPAIR	TOTAL	LOSSES TO COMBAT UNITS: COMBAT TEMP	COMBAT PERM	NONCOMBAT TEMP	NONCOMBAT PERM	TOTAL	GAINS TO THEATER STOCKS: FROM RESUPPLY	FROM REPAIR	GAINS TO UNIT
PERSNL	2267491.7	5729.0	16385.9	2488551.0	15594.8	153571.7	849.5	919.7	120371.8	68346	.0	62622.0
1	17491.6	29.0	1509.1	19029.6	1425.9	13288.8	78.6	38.8	14830.9	346	.0	317.0
2	209250.1	5695.0	14881.3	229826.4	14119.9	140283.7	761.9	375.9	155541.0	68800	.0	62305.0
POL	1063259.8	14489092.7	.0	15552352.5	.0	90275.9	.0	883.3	91159.2	987500	.0	90907.3
1	105952.3	1010775.8	.0	1116728.1	.0	3563.8	.0	161.7	3745.5	51000	.0	3729.2
2	957307.5	13478317.0	.0	14435624.5	.0	36712.1	.0	701.6	37413.7	936500	.0	37183.1
AMMO	130379.7	10047287.0	.0	10046032.54.0	.0	8158.5	.0	34.5	8193.0	15200	.0	8130.5
1	10499.5	1000079.0	.0	1010578.5	.0	740.6	.0	5.8	746.4	9707	.0	741.0
2	119880.2	9649210.5	.0	9847790.7	.0	7417.9	.0	28.6	7446.6	5501	.0	7389.5
TNKS 5	179.0	2.1	21.9	203.0	11.9	12.5	10.0	2.5	36.9	38	.0	35.9
TNKS 6	870.9	.0	215.7	1086.1	145.2	159.1	70.5	11.8	386.6	61	.0	61.0
TNKSUM	1049.9	2.1	237.6	1289.1	157.1	171.6	80.5	14.3	423.5	99.	.0	96.9
APCS 5	55.0	.0	42.2	97.2	38.8	17.2	3.9	.7	60.0	12	.0	12.0
APCS 6	511.7	.0	197.2	709.0	146.6	54.9	31.6	6.2	258.3	16	.0	16.0
APCS 7	147.9	35.8	57.5	240.7	50.5	40.9	7.1	1.3	99.8	133	.0	97.2
APCSUM	714.1	35.8	297.0	1046.9	254.9	113.0	42.1	8.1	418.1	161.	.0	125.2
HELO 3	36.0	.0	16.8	52.8	11.8	26.1	5.1	.9	43.8	.0	.0	.0
HELSUM	36.0	.0	16.8	52.8	11.8	26.1	5.1	.9	43.8	.0.	.0	.0
AT/H 5	1629.2	.0	.0	1629.2	.0	552.8	.0	.0	552.8	921	.0	921.0
AT/H 6	1331.3	.0	.0	1331.3	.0	590.8	.0	.0	590.8	.0	.0	.0

Figure III.1.4

BLUE FORCE THEATERWIDE LOGISTIC SUMMARY AT END OF THEATER CYCLE 1

THEATER RESRCES	RESOURCES ON HAND: COMBAT UNITS	RESOURCES ON HAND: THEATER STOCKS	RESOURCES ON HAND: IN REPAIR	RESOURCES ON HAND: TOTAL	LOSSES TO COMBAT UNITS: COMBAT TEMP	LOSSES TO COMBAT UNITS: COMBAT PERM	LOSSES TO COMBAT UNITS: NONCOMBAT TEMP	LOSSES TO COMBAT UNITS: NONCOMBAT PERM	LOSSES TO COMBAT UNITS: TOTAL	GAINS TO THEATER STOCKS: FROM RESUPPLY	GAINS TO THEATER STOCKS: FROM REPAIR	GAINS TO UNIT
(CONTINUED FROM PRECEDING PAGE)												
AT/M 7	90.2	9385.5	.0	9475.7	.0	34.3	.0	.0	34.3	9419	.0	33.8
AT/M 8	198.1	.0	.0	198.1	.0	129.9	.0	.0	129.9	32	.0	32.0
AT/M 9	202.0	802.0	.0	1004.0	.0	.0	.0	.0	.0	802	.0	.0
AT/M10	1995.0	209.0	.0	2204.0	.0	.0	.0	.0	.0	209	.0	.0
AT/M11	66.0	156.0	.0	222.0	.0	.0	.0	.0	.0	156	.0	.0
AT/M12	260.0	177.0	.0	437.0	.0	.0	.0	.0	.0	177	.0	.0
ATMSUM	771.7	9729.5	.0	11501.2	.0	1307.8	.0	.0	1307.8	6216.	.0	486.5
ARTY 4	1232.5	.1	.0	1232.6	.0	.0	.0	43.4	43.4	34	.0	33.9
ARTY 5	988.8	86.1	.0	1074.9	.0	.0	.0	36.1	36.1	121	.0	34.9
ARTY 7	227.7	2.6	.0	230.4	.0	.0	.0	8.6	8.6	11	.0	8.4
ARTY 8	12.0	6.6	.0	18.5	.0	.0	.0	.5	.5	7	.0	.4
ARTSUM	2461.0	95.4	.0	2556.4	.0	.0	.0	88.6	88.6	173.	.0	77.6
ORT-AM	273956.5	11477642.0	.0	11605049.0	.0	91580.5	.0	.0	91580.5	96029.	.0	91287.0
1	67919.2	10007940.0	.0	10081448.0	.0	12819.2	.0	.0	12819.2	93140	.0	12738.9
2	206542.4	14697348.9	.0	14903883.2	.0	28761.2	.0	.0	28761.2	2889	.0	28548.2

Figure III.1.4 (Cont.)

RED FORCE THEATERWIDE LOGISTIC SUMMARY AT END OF THEATER CYCLE 1

THEATER RESRCES	RESOURCES ON HAND: COMBAT UNITS	RESOURCES ON HAND: THEATER STOCKS	RESOURCES ON HAND: IN REPAIR	RESOURCES ON HAND: TOTAL	LOSSES TO COMBAT UNITS: COMBAT TEMP	LOSSES TO COMBAT UNITS: COMBAT PERM	LOSSES TO COMBAT UNITS: NONCOMBAT TEMP	LOSSES TO COMBAT UNITS: NONCOMBAT PERM	LOSSES TO COMBAT UNITS: TOTAL	GAINS TO THEATER STOCKS: FROM RESUPPLY	GAINS TO THEATER STOCKS: FROM REPAIR	GAINS TO UNIT
PERSNL	337717.0	39000.0	9326.8	3840943.0	7999.7	49909.3	1326.9	654.9	59389.8	39000	.0	.0
POL	58809.3	99974992.0	.0	33796.0	.0	20623.1	.0	3540.7	24163.7	0	.0	24000.2
AMMO	257825.7	13158.6	.0	270179.3	.0	17428.2	.0	429.5	17857.6	3069	.0	17716.9
TNKS 3	1340.6	76.0	86.1	1502.7	19.8	27.9	66.9	1.9	115.9	.0	.0	.0
TNKS 4	1330.0	100.0	321.8	1751.9	247.9	410.6	74.5	1.5	734.0	.0	.0	.0
TNKS 5	142.2	2.0	8.2	152.3	1.2	2.5	7.0	.1	10.8	.0	.0	.0
TNKS 6	953.6	520.0	30.6	1004.2	8.0	11.3	22.6	.5	42.4	.0	.0	.0
TNKSUM	3266.4	698.0	446.8	4411.2	276.9	452.4	170.9	3.5	902.6	.0	.0	.0
APCS 1	161.3	20.0	106.0	287.3	96.5	20.5	9.5	.2	126.7	.0	.0	.0
APCS 2	482.9	90.0	50.7	623.6	26.5	23.9	24.2	.5	75.1	0	.0	.0
APCS 4	775.7	95.0	175.3	1046.1	134.9	26.1	40.5	.8	202.3	.0	.0	.0
APCSUM	1419.9	205.0	332.1	1957.0	257.9	70.5	74.2	1.5	404.1	.0	.0	.0
HELO 1	.5	.0	.2	.7	.1	.3	.1	.0	.5	.0	.0	.0
HELSUM	.5	.0	.2	.7	.1	.3	.1	.0	.5	.0	.0	.0
AT/H 1	700.7	.0	.0	700.7	.0	55.3	.0	.0	55.3	.0	.0	.0
AT/H 3	10674.2	.0	.0	10674.2	.0	1490.8	.0	.0	1490.8	.0	.0	.0
AT/H 4	147.5	.0	.0	147.5	.0	14.5	.0	.0	14.5	.0	.0	.0
AT/H 6	62.4	28.0	.0	90.4	.0	9.6	.0	.0	9.6	.0	.0	.0
AT/H 8	70.7	132.0	.0	202.7	.0	13.3	.0	.0	13.3	.0	.0	.0
AT/H 9	530.4	.0	.0	530.4	.0	81.6	.0	.0	81.6	.0	.0	.0

Figure III.1.4 (Cont.)

RED FORCE THEATERWIDE LOGISTIC SUMMARY

AT END OF THEATER CYCLE 1

THEATER RESRCES	RESOURCES ON HAND: COMBAT UNITS	RESOURCES ON HAND: THEATER STOCKS	RESOURCES ON HAND: IN REPAIR	LOSSES TO COMBAT UNITS: TOTAL	LOSSES TO COMBAT UNITS: COMBAT TEMP	LOSSES TO COMBAT UNITS: COMBAT PERM	LOSSES TO COMBAT UNITS: NONCOMBAT TEMP	LOSSES TO COMBAT UNITS: NONCOMBAT PERM	LOSSES TO COMBAT UNITS: TOTAL	GAINS TO THEATER STOCKS: FROM RESUPPLY	GAINS TO THEATER STOCKS: FROM REPAIR	GAINS TO UNIT
(CONTINUED FROM PRECEDING PAGE)												
AT/MI0	976.1	1000.0	.0	1976.1	.0	157.9	.0	.0	157.9	0	.0	.0
AT/MI1	2142.0	1018.0	.0	3160.0	.0	.0	.0	.0	.0	0	.0	.0
AT/MI2	3240.0	6000.0	.0	9240.0	.0	.0	.0	.0	.0	0	.0	.0
ATMSUM	18543.9	8178.0	.0	26721.9	.0	1823.1	.0	.0	1823.1	0.	.0	.0
ARTY 1	1282.5	346.2	.0	1628.7	.0	.0	.0	48.3	45.3	0	.0	93.8
ARTY 2	768.2	.0	.0	768.2	.0	.0	.0	23.8	23.8	0	.0	.0
ARTY 3	2768.7	92.2	.0	2860.9	.0	.0	.0	97.1	97.1	0	.0	93.8
ARTY 4	103.9	.0	.0	103.9	.0	.0	.0	4.1	4.1	0	.0	.0
ARTY 5	1041.2	.0	.0	1041.2	.0	.0	.0	38.8	38.8	0	.0	.0
ARTY 6	3227.1	494.1	.0	3721.2	.0	.0	.0	118.8	118.8	0	.0	119.9
ARTY 7	418.4	.1	.0	418.4	.0	.0	.0	13.6	13.6	0	.0	2.9
ARTY 8	47.9	1.2	.0	49.2	.0	.0	.0	1.8	1.8	0	.0	1.8
ARTSUM	9457.9	933.8	.0	10591.7	.0	.0	.0	343.3	343.3	0.	.0	257.2
ART+AM	509931.9	.0	.0	509931.9	.0	104888.1	.0	.0	104888.1	93039.	.0	93039.0

Figure III.1.4 (Cont.)

BLUE

COMBAT UNIT SUMMARY

ALL UNITS AT END OF DIVISION CYCLE 16

THEATER RESRCES	COMBAT UNIT STATUS AFTER RESUPPLY AUTHORIZED	ON HAND	PERCENT	COMBAT UNIT SUPPORT BEFORE RESUPPLY AVAILABLE	REQUIRED	PERCENT	TOTAL UNIT LOSSES	CUMULATIVE COMBAT UNIT LOSSES COMBAT TEMP	COMBAT PERM	NONCOMBAT TEMP	NONCOMBAT PERM	TOTAL
PERSNL	394299.9	291784.2	61.3	8593.3	140895.8	5.3	113209.6	2671.3	28923.9	1763.2	870.0	28358.5
1	39919.5	18919.5	47.9	93.2	21038.9	.2	6836.1	227.8	1923.1	146.0	72.0	2164.0
2	354330.4	272864.8	62.9	8500.0	119806.9	6.1	106373.6	2444.5	27000.8	1617.2	798.0	26194.6
POL	1136757.8	1136433.0	100.0	**********	6462.5	999.9	43711.9	.0	8316.5	.0	1706.0	8987.5
1	110293.0	110269.9	100.0	105885.7	971.7	999.9	3376.9	.0	684.5	.0	279.5	712.9
2	1026464.8	1026163.6	100.0	**********	5490.7	999.9	40334.0	.0	7632.1	.0	1426.6	7774.6
AMMO	151868.7	151794.0	100.0	**********	1497.6	999.9	10392.1	.0	1853.6	.0	51.6	1858.1
1	11975.9	11970.5	100.0	**********	105.3	999.9	799.2	.0	653.2	.0	9.5	154.7
2	139892.8	139823.5	100.0	462158.7	1392.4	999.9	9592.9	.0	1699.4	.0	42.1	1703.8
TNKS 1	108.0	107.5	99.6	698.9	2.3	999.9	6.4	1.4	.7	4.0	.2	6.4
TNKS 3	9.0	7.7	85.2	.0	1.3	.0	1.3	.9	.2	.2	.0	1.3
TNKS 5	180.0	179.0	99.5	36.5	4.8	767.4	29.2	17.0	22.8	21.3	4.9	66.1
TNKS 6	1292.0	930.4	72.0	32.9	391.8	8.4	293.4	220.5	298.7	138.6	22.2	680.0
TNKSUM	1589.0	1284.6	97.1	768.3	400.2	192.0	330.3	239.7	322.5	164.2	27.4	753.8
APCS 1	24.0	23.8	99.3	528.7	.9	999.9	4.2	2.9	.6	.6	.1	4.2
APCS 2	157.0	156.1	99.4	305.7	4.5	999.9	21.8	15.1	1.9	4.2	.6	21.8
APCS 3	42.0	41.8	99.6	211.0	.9	999.9	5.0	2.9	.8	1.1	.2	5.0
APCS 4	31.0	30.9	99.5	139.9	.7	999.9	2.8	1.6	.2	.8	.1	2.8

Figure III.1.4 (Cont.)

CEM REPORT GENERATOR PAGE 12

)3KOREA83)RUNSEC/KOREA87-05 8C 06MAY88)UNCLASSIFIED)

BLUE

COMBAT UNIT SUMMARY

ALL UNITS AT END OF DIVISION CYCLE 16

THEATER RESRCES	COMBAT UNIT STATUS AFTER RESUPPLY AUTH)ORIZED	ON HAND	PER) CENT	COMBAT UNIT SUPPORT BEFORE RESUPPLY AVAILABLE	REQUIRED	PER) CENT	TOTAL UNIT LOSSES	CUMULATIVE COMBAT UNIT LOSSES COMBAT TEMP	COMBAT PERM	NONCOMBAT TEMP	NONCOMBAT PERM	TOTAL
(CONTINUED FROM PRECEDING PAGE)												
APCS 5	109.0	70.3	67.6	6.8	98.2	16.8	90.0	64.0	28.1	6.7	1.2	100.0
APCS 6	759.0	562.1	99.6	24.9	216.8	11.5	152.1	257.8	81.2	60.2	11.1	410.3
APCS 7	150.0	144.8	96.5	156.2	13.5	999.9	72.9	80.2	75.3	14.5	2.6	172.7
APCSUM	1262.0	1029.8	81.6	1373.1	277.5	499.9	298.8	424.6	188.2	88.2	15.9	716.8
HELO 1	48.0	43.7	91.0	1.6	6.0	27.2	17.3	3.9	10.2	3.0	.3	17.3
HELO 3	54.0	43.8	81.1	2.1	17.4	12.2	54.3	24.5	58.7	11.0	1.9	98.1
HELO 9	74.0	49.8	67.3	.0	24.2	.0	24.2	6.4	13.2	4.1	.5	24.2
HELSUM	176.0	137.3	78.0	3.8	47.5	7.9	95.8	34.8	82.1	18.1	2.7	139.6
AT/H 1	45.0	45.0	100.0	99999.0	.0	.0	.0	.0	.0	.0	.0	.0
AT/H 3	147.0	145.1	98.7	99985.1	9.4	999.9	23.4	.0	23.4	.0	.0	23.4
AT/H 4	94.0	92.4	94.2	81.7	17.8	459.1	99.1	.0	99.1	.0	.0	99.1
AT/H 5	2277.0	2105.0	92.9	52.6	224.7	23.4	461.2	.0	1014.0	.0	.0	1014.0
AT/H 6	2239.0	1303.5	58.3	.0	938.5	.0	339.7	.0	930.5	.0	.0	930.5
AT/H 7	115.0	114.1	99.2	8782.7	4.6	999.9	25.7	.0	40.0	.0	.0	40.0
AT/H 8	350.0	229.8	64.2	4.0	129.2	3.1	89.2	.0	189.2	.0	.0	189.2
AT/H 9	334.0	334.0	100.0	1604.0	.0	.0	.0	.0	.0	.0	.0	.0
AT/H10	1995.0	1995.0	100.0	418.0	.0	.0	.0	.0	.0	.0	.0	.0
AT/H11	66.0	66.0	100.0	312.0	.0	.0	.0	.0	.0	.0	.0	.0

Figure III.1.4 (Cont.)

BLUE

COMBAT UNIT SUMMARY

ALL UNITS AT END OF DIVISION CYCLE 16

THEATER RESRCES	COMBAT UNIT STATUS AFTER RESUPPLY: AUTHORIZED	ON HAND	PER CENT	COMBAT UNIT SUPPORT BEFORE RESUPPLY: AVAILABLE	REQUIRED	PER CENT	TOTAL UNIT LOSSES	CUMULATIVE COMBAT UNIT LOSSES: COMBAT TEMP	COMBAT PERM	NONCOMBAT TEMP	NONCOMBAT PERM	TOTAL
(CONTINUED FROM PRECEDING PAGE)												
AT/M12	266.0	266.0	100.0	359.0	.0	.0	.0	.0	.0	.0	.0	.0
ATMSUM	7925.0	6690.9	84.4	21593.0	1316.2	999.9	953.4	.0	2261.1	.0	.0	2261.1
ARTY 2	94.0	93.9	99.9	345.3	.3	999.9	1.0	.0	.0	.0	1.0	1.0
ARTY 3	12.0	12.0	99.9	143.6	.1	999.9	.2	.0	.0	.0	.2	.2
ARTY 4	1512.0	1481.1	98.0	4.9	34.8	12.8	55.3	.0	.0	.0	98.7	98.7
ARTY 5	1080.0	1078.7	99.9	171.6	6.9	999.9	90.7	.0	.0	.0	76.8	76.8
ARTY 6	9.0	9.0	99.9	34.9	.1	999.9	.2	.0	.0	.0	.2	.2
ARTY 7	228.0	227.7	99.9	6.0	1.9	938.9	8.7	.0	.0	.0	17.9	17.9
ARTY 8	12.0	12.0	99.9	53.2	.1	999.9	.5	.0	.0	.0	.9	.9
ARTSUM	2907.0	2879.9	98.9	719.2	93.8	999.9	106.7	.0	.0	.0	195.2	195.2
A AM 1	318798.0	318429.5	99.9	**********	7207.8	999.9	9996.1	.0	91541.6	.0	.0	91541.6
ART AM	318798.0	318429.5	99.9	**********	7207.8	999.9	9996.1	.0	91541.6	.0	.0	91541.6
A AM 1	73699.5	73595.5	99.9	**********	1979.7	999.9	1312.3	.0	25948.5	.0	.0	25948.5
A AM 2	249095.5	248834.0	99.9	**********	5228.1	999.9	3683.9	.0	65593.1	.0	.0	65593.1

Figure III.1.4 (Cont.)

RED

COMBAT UNIT SUMMARY

ALL UNITS AT END OF DIVISION CYCLE 16

THEATER RESRCES	COMBAT UNIT STATUS AFTER RESUPPLY: AUTHORIZED	ON HAND	PERCENT	COMBAT UNIT SUPPORT BEFORE RESUPPLY: AVAILABLE	REQUIRED	PERCENT	TOTAL UNIT LOSSES	CUMULATIVE COMBAT UNIT LOSSES: COMBAT TEMP	COMBAT PERM	NONCOMBAT TEMP	NONCOMBAT PERM	TOTAL
PERSNL	396673.0	293919.1	73.8	77087.2	103820.7	74.3	45343.4	13799.6	8720.5	2493.6	1230.4	104733.2
POL	58983.0	58820.6	99.7	**********	3245.3	999.9	2475.4	.0	44247.4	.0	4687.7	48935.2
AMMO	257169.3	257026.0	99.9	26354.9	2867.0	919.3	20390.9	.0	37731.9	.0	516.6	38248.6
TNKS 3	1456.0	1188.1	81.6	78.6	267.9	29.3	152.4	56.3	83.1	25.9	2.4	267.9
TNKS 4	2049.0	1677.2	82.2	116.3	986.8	11.8	252.8	321.2	532.3	130.6	2.7	986.8
TNKS 5	163.0	127.6	83.9	2.3	25.4	8.9	14.6	3.7	8.1	13.3	.3	25.4
TNKS 6	496.0	396.8	80.0	520.9	99.2	525.3	56.8	22.6	33.2	42.6	.9	99.2
TNKSUM	4169.0	2789.8	66.9	718.0	1379.2	52.1	476.6	403.8	656.6	312.4	6.4	1379.2
APCS 1	288.0	91.8	31.9	30.6	196.2	15.6	69.4	153.3	27.2	15.4	.3	196.2
APCS 2	568.0	399.4	71.2	95.0	140.6	59.1	85.6	53.3	61.7	44.7	.9	140.6
APCS 4	978.0	579.3	59.2	109.4	398.7	27.4	196.5	277.2	48.5	71.6	1.5	398.7
APCSUM	1824.0	1068.4	58.6	235.0	755.6	31.1	351.5	483.7	137.4	131.8	2.7	755.6
HELO 1	1.0	.2	18.9	.2	.8	27.3	.3	.2	.4	.2	.0	.8
HELSUM	1.0	.2	18.9	.2	.8	27.3	.3	.2	.4	.2	.0	.8
AT/H 1	756.0	659.3	86.9	.0	98.7	.0	93.4	.0	98.7	.0	.0	98.7

Figure III.1.4 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
73EUROPE88. RUN E8865 05DEC81 *UNCLASSIFIED*

LOSSES DURING DAY 1
BLUE TOTAL

		LOSSES OF SIDE BLUE RED CATEGORY CAUSING LOSS					
BLUE CATEGORY LOST	TANKS	APCS	AT/H	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	169.83	33.80	9.05	111.00	4.77	90.70	419.15
(TEMP)	103.96	21.62	5.11	76.90	34.97	42.68	285.25
APC (PERM)	92.89	43.17	3.77	10.08	13.60	68.30	231.82
(TEMP)	299.72	158.19	14.45	36.94	78.04	152.03	739.37
AT/H	57.20	190.84	7.11	6.11	424.81	19.11	705.20
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	908.58	302.85	44.51	386.73	167.27	470.48	2280.42
HELO CREW							47.35
NONCRW	609.62	1362.92	46.70	47.04	4451.01	203.22	6720.51
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							49.51

		LOSSES OF SIDE RED BLUE CATEGORY CAUSING LOSS					
RED CATEGORY LOST	TANKS	APCS	AT/H	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	196.96	104.03	43.23	162.99	14.07	126.17	647.45
(TEMP)	99.97	47.97	27.99	83.07	24.86	59.37	343.23
APC (PERM)	141.14	196.91	56.21	32.18	8.37	149.67	584.49
(TEMP)	182.99	243.58	90.29	41.68	12.48	70.44	641.44
AT/H	21.24	50.50	10.51	9.53	325.37	45.35	462.51
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	1002.81	978.65	352.77	519.10	96.66	659.93	3609.93
HELO CREW							56.39
NONCRW	106.06	248.00	49.34	38.31	2092.09	232.66	2766.46
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							70.49

Figure III.1.5

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
73EUROPE88. RUN F8865 05DEC81 *UNCLASSIFIED*

LOSSES DURING DAY 1

BLUE PART 1

BLUE CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE RED CATEGORY CAUSING BLUE LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	5.99	.50	.13	4.01	.24	6.57	17.43
(TEMP)	23.68	3.69	.72	23.88	2.79	3.39	57.85
APC (PERM)	6.87	5.02	.22	2.76	1.82	4.02	20.70
(TEMP)	17.41	12.42	.57	6.48	8.41	8.95	54.24
AT/M	5.06	2u.70	1.43	.68	33.40	1.28	62.54
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	73.28	25.83	2.16	55.28	16.90	29.64	203.08
HELO CREW							9.25
NONCRW	35.01	148.65	6.52	6.40	305.77	9.94	512.29
ARTILLERY	.00	.30	.00	.30	.00	.30	.00
HELOS							11.41

RED CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE BLUE CATEGORY CAUSING RED LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	30.26	8.27	1.48	38.37	4.87	6.71	89.97
(TEMP)	15.65	3.63	.91	19.54	8.83	3.16	51.73
APC (PERM)	20.71	9.50	2.00	10.21	2.26	8.76	53.44
(TEMP)	30.62	16.12	3.78	15.91	3.48	4.12	74.02
AT/M	2.62	2.16	.26	1.72	49.54	2.52	58.82
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	156.75	60.16	13.23	135.72	31.31	36.59	433.75
HELO CREW							6.20
NONCRW	13.02	14.25	1.42	8.23	275.14	12.93	324.99
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							7.75

Figure III.1.5 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
***** ****** ******* ***** * ***** ** ***** *****
LOSSES DURING DAY 1 73EURDPE88. RUN E8865 05DEC81 *UNCLASSIFIED*
------ ------ --- BLUE PART 2

		LOSSES OF SIDE BLUE RED CATEGORY CAUSING LOSS					
BLUE CATEGORY LOST	TANKS	APCS	AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	69.41	15.29	3.38	61.35	2.10	39.53	191.06
(TEMP)	33.77	8.23	1.66	31.54	15.61	18.60	109.42
APC (PERM)	22.09	21.91	1.46	4.90	6.10	27.71	84.17
(TEMP)	115.61	78.35	5.27	19.87	31.63	61.68	312.41
AT/M	27.23	118.19	3.33	3.71	217.48	9.67	379.61
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	298.58	125.92	14.44	190.80	63.17	178.88	871.79
HELO CREW							11.91
NONCRW	144.47	515.47	12.11	17.34	1125.24	51.06	1865.69
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							11.91

		LOSSES OF SIDE RED BLUE CATEGORY CAUSING LOSS					
RED CATEGORY LOST	TANKS	APCS	AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	86.46	47.76	11.98	42.92	4.11	47.21	240.45
(TEMP)	44.07	22.55	8.03	22.15	7.14	22.22	126.16
APC (PERM)	63.58	65.05	15.24	8.68	3.07	61.13	216.75
(TEMP)	85.59	91.51	27.45	12.07	4.84	28.77	250.22
AT/M	9.17	19.77	2.96	2.37	137.11	15.96	187.32
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	455.10	372.44	101.73	138.82	30.64	255.31	1354.04
HELO CREW							27.90
NONCRW	47.15	102.44	14.44	11.17	824.78	91.00	1090.98
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							34.87

Figure III.1.5 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
***** ****** ******* ***** * ***** ** ***** *****
LOSSES DURING DAY 1 73EUROPE88. RUN E8865 05DEC81 *UNCLASSIFIED*
------ ------ --- BLUE PART 3

BLUE CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE RED CATEGORY CAUSING BLUE LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	94.44	18.01	5.54	45.65	2.42	44.60	210.65
(TEMP)	46.51	9.70	2.73	21.48	16.56	20.99	117.97
APC (PERM)	63.94	16.23	2.09	2.43	5.68	36.57	126.95
(TEMP)	166.70	67.41	8.61	10.59	38.00	81.41	372.72
AT/M	24.92	51.96	2.36	1.72	173.93	8.17	263.05
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	536.73	151.10	27.91	140.65	87.21	261.96	1205.55
HELO CREW							26.19
NONCRW	430.15	698.80	28.07	23.30	3020.00	142.22	4342.53
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							26.19

RED CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE BLUE CATEGORY CAUSING RED LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	80.24	48.00	29.76	81.70	5.07	71.90	316.67
(TEMP)	40.25	21.78	19.04	41.38	8.87	33.84	165.15
APC (PERM)	56.85	122.36	38.97	13.30	2.99	79.67	314.14
(TEMP)	66.78	135.95	59.06	13.70	4.09	37.49	317.07
AT/M	9.46	28.57	7.29	5.44	138.73	26.87	216.36
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	390.96	546.06	237.81	244.57	34.49	366.99	1820.89
HELO CREW							22.30
NONCRW	45.88	131.31	33.49	18.90	657.55	120.52	1007.65
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							27.87

Figure III.1.5 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
***** ****** ******* ***** * ***** ** ***** *****
73EUROPE88. RUN E8865 05DEC81 *UNCLASSIFIED*

LOSSES DURING DAY 2
------ ------ ---
BLUE TOTAL

LOSSES OF SIDE BLUE
RED CATEGORY CAUSING LOSS

BLUE CATEGORY LOST	TANKS	APCS	AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	178.29	32.75	10.51	138.40	4.72	100.98	465.65
(TEMP)	166.74	36.40	10.56	118.08	39.44	47.52	418.74
APC (PERM)	78.32	59.56	5.83	9.84	12.39	61.72	227.68
(TEMP)	300.39	194.73	19.36	35.83	66.20	137.38	753.90
AT/M	67.21	283.46	9.22	6.15	523.95	23.34	913.33
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	973.73	374.31	61.21	497.75	155.73	452.27	2515.02
HELO CREW							107.94
NONCRW	677.31	2229.10	65.32	77.81	4993.95	228.29	8271.78
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							119.50

LOSSES OF SIDE RED
BLUE CATEGORY CAUSING LOSS

RED CATEGORY LOST	TANKS	APCS	AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	284.47	135.69	42.98	309.31	31.74	100.45	904.64
(TEMP)	144.58	63.69	28.35	157.39	55.56	47.27	496.85
APC (PERM)	202.59	203.86	55.67	82.03	15.00	123.56	682.70
(TEMP)	286.72	300.38	97.59	118.18	22.83	58.15	883.85
AT/M	44.18	69.70	10.74	24.17	619.68	43.61	812.09
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	1475.70	1140.58	360.31	1083.20	201.52	526.37	4791.67
HELO CREW							122.01
NONCRW	243.03	406.89	63.18	136.85	3737.24	265.34	4852.53
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							152.51

Figure III.1.5 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
***** ****** ******* ***** * ***** ** ***** *****

LOSSES DURING DAY 2 — 73EUROPE80, RUN E8865 05DEC81 *UNCLASSIFIED*

BLUE PART 1

BLUE CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE RED CATEGORY CAUSING BLUE LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	42.18	5.47	1.53	11.30	1.45	35.22	97.14
(TEMP)	100.14	21.71	6.14	55.36	14.50	16.57	214.42
APC (PERM)	36.85	26.81	2.48	4.19	4.62	20.64	95.60
(TEMP)	112.90	68.04	6.25	11.35	21.65	45.95	266.12
AT/M	24.45	104.88	3.12	1.91	172.73	7.30	314.40
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	396.56	149.93	21.95	124.47	55.61	157.62	906.18
HELO CREW							48.91
NONCRW	222.38	1058.15	22.01	22.44	1773.13	76.43	3174.54
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							60.47

RED CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE BLUE CATEGORY CAUSING RED LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	128.37	64.54	10.44	225.55	25.96	15.55	470.40
(TEMP)	65.49	28.86	6.54	114.54	45.71	7.32	268.46
APC (PERM)	97.17	79.61	13.66	66.46	11.00	20.49	288.38
(TEMP)	121.60	112.97	25.29	93.95	16.71	9.64	380.14
AT/M	23.90	31.63	3.32	18.16	363.19	10.01	450.20
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	678.93	472.95	91.23	816.07	160.64	85.72	2305.54
HELO CREW							22.84
NONCRW	124.60	172.85	18.45	104.89	2038.49	57.26	2516.55
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							28.54

Figure III.1.5 (Cont.)

LOSSES DURING DAY 2 BLUE PART 2

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
73EUROPE88. RUN F8865 05DEC81 *UNCLASSIFIED*

BLUE CATEGORY LOST	LOSSES OF SIDE BLUE CATEGORY CAUSING LOSS: RED AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	84.37	18.62	5.82	79.66	2.25	47.01	237.73
(TEMP)	41.11	10.03	2.87	40.40	18.00	22.12	134.53
APC (PERM)	21.21	23.50	2.47	3.45	5.22	27.56	83.42
(TEMP)	118.93	87.36	8.95	14.80	28.76	61.34	320.14
AT/M	29.74	143.05	3.64	2.58	265.52	12.06	456.59
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	332.14	143.44	24.60	221.63	63.37	192.40	977.58
HELO CREW							21.48
NONCRW	205.73	746.26	17.85	15.59	1725.60	79.71	2790.73
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							21.48

RED CATEGORY LOST	LOSSES OF SIDE RED CATEGORY CAUSING LOSS: BLUE AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	112.00	46.65	14.78	45.55	2.02	35.57	256.58
(TEMP)	57.64	23.31	10.10	23.41	3.61	16.74	134.80
APC (PERM)	76.28	63.63	18.60	11.83	1.64	44.53	216.52
(TEMP)	125.07	107.76	34.77	18.83	2.70	20.96	310.08
AT/M	16.67	25.50	4.42	4.90	159.64	17.38	228.51
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	589.95	385.87	125.99	160.38	15.63	188.93	1466.76
HELO CREW							57.61
NONCRW	92.22	145.52	23.35	24.65	916.99	95.70	1298.42
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							72.01

Figure III.1.5 (Cont.)

DAILY COMBAT DAMAGED (PERM + TEMP) VS CAUSE TABLE
***** ****** ******** ***** * ***** ** ***** *****
73EUROPE88. RUN F8865 05DEC81 *UNCLASSIFIED*

LOSSES DURING DAY 2
BLUE PART 3

BLUE CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE RED CATEGORY CAUSING BLUE LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	51.74	8.65	3.16	47.44	1.03	18.76	130.78
(TEMP)	25.48	4.66	1.56	22.32	6.94	6.83	69 79
APC (PERM)	20.26	9.24	.88	2.21	2.55	13.52	48.66
(TEMP)	68.57	39.33	4.16	9.68	15.79	30.10	167.64
AT/M	13.02	35.53	2.46	1.66	85.70	3.97	142.34
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	245.04	80.94	14.66	151.65	36.76	102.26	631.32
HELO CREW							37.55
NONCRW	249.19	424.70	25.47	39.78	1495.23	72.15	2306.52
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							37.55

RED CATEGORY LOST	TANKS	APCS	LOSSES OF SIDE BLUE CATEGORY CAUSING RED LOSS AT/M	HELOS	ARTY	CAS	TOTAL
TANKS (PERM)	44.10	24.49	17.76	38.21	3.76	49.16	177.48
(TEMP)	21.46	11.52	11.71	19.43	6.23	23.14	93.49
APC (PERM)	29.14	60.62	23.41	3.73	2.34	58.50	177.74
(TEMP)	40.05	79.66	37.54	5.40	3.39	27.53	193.58
AT/M	3.61	12.57	3.01	1.11	96.85	16.23	133.38
PERSONNEL (INCLUDES AID STATION & R.T.O.):							
CREW	210.82	281.75	143.09	106.75	25.17	251.26	1018.85
HELO CREW							41.56
NONCRW	26.21	88.53	21.39	7.30	647.72	109.54	900.68
ARTILLERY	.00	.00	.00	.00	.00	.00	.00
HELOS							51.95

Figure III.1.5 (Cont.)

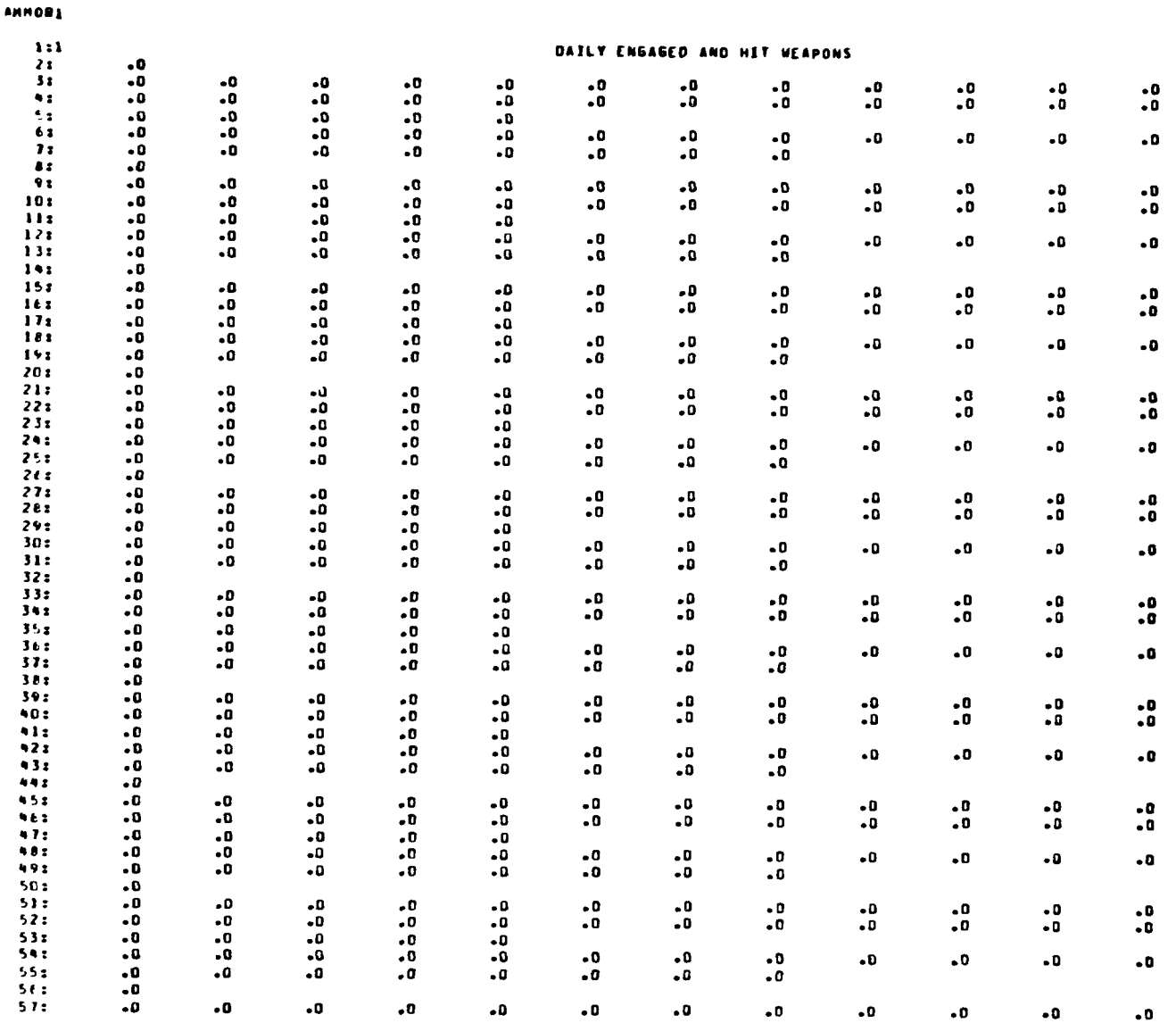


Figure III.1.6

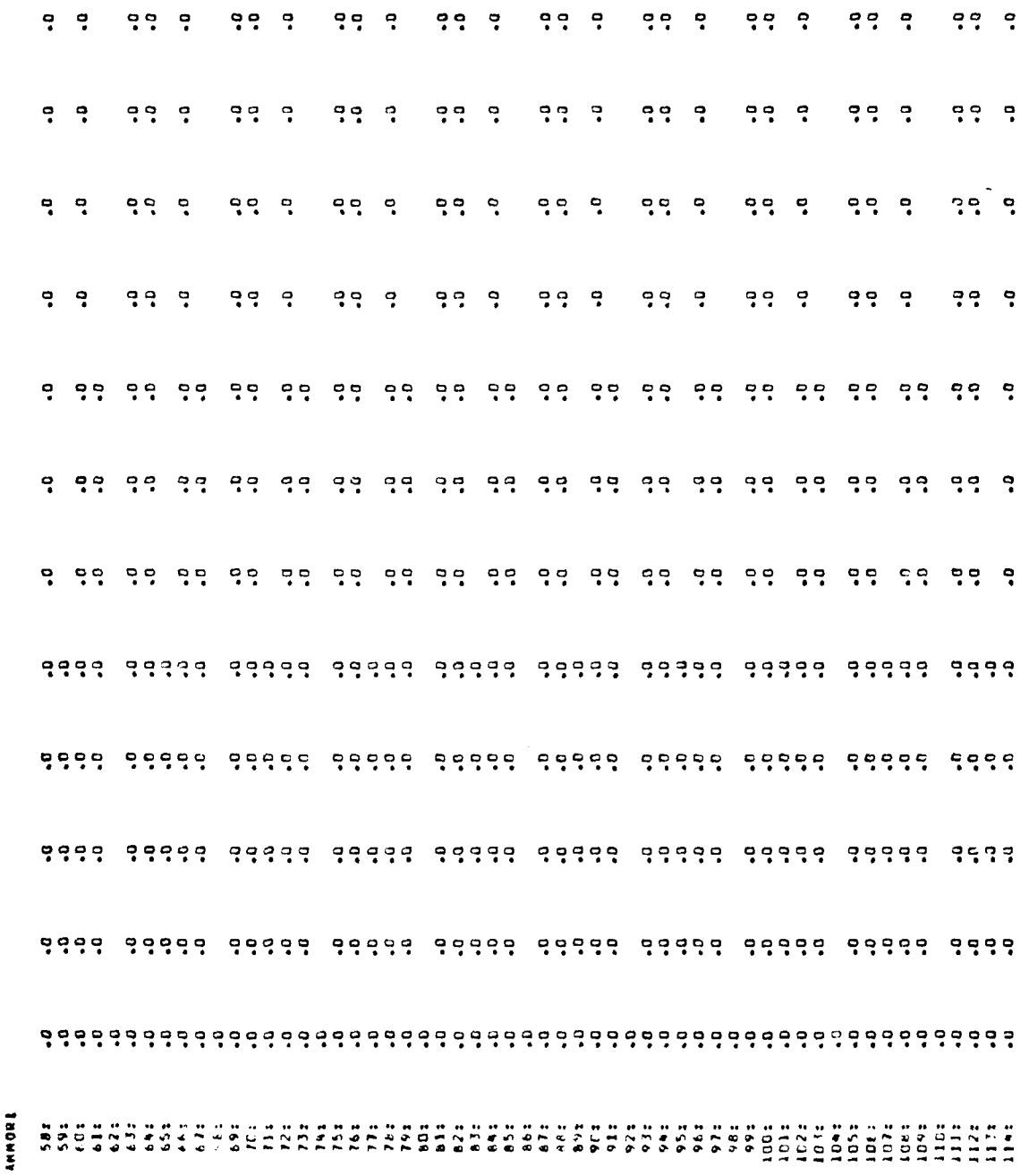


Figure III.1.6 (Cont.)

AMMOR1

115:	.0	.0	.0	.0	.0	.0	.0	.0				
116:	.0											
117:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
118:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
119:	.0	.0	.0	.0	.0							
120:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
121:	.0	.0	.0	.0	.0	.0	.0	.0				
122:	7234.4											
123:	.0	62.9	.0	255.3	.0	.0	.0	.0	.0	.0	.0	.0
124:	8.3	241.7	66.2	32.5	.0	.0	.0	.0	.0	.0	.0	.0
125:	46.7	.0	.0	4.6	25.6							
126:	.0	67.7	154.8	.0	.0	.0	.0	.0	.0	.0	.0	.0
127:	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
128:	5531.9											
129:	79.4	153.8	47.0	55.6	.0	.0	.0	.0	.0	.0	.0	.0
130:	89.3	202.4	41.7	127.5	.0	.0	5.3	.0	19.5	.0	.0	19.1
131:	66.4	.0	.0	.0	.0							
132:	6.0	18.0	349.7	12.0	378.0	18.0	.0	.0	.0	.0	66.0	13.3
133:	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
134:	557.3											
135:	.0	10.4	.0	46.5	.0	.0	.0	.0	.0	.0	.0	.0
136:	1.8	19.6	9.7	4.8	.0	.0	.0	.0	.0	.0	.0	.0
137:	4.6	.0	.0	.5	2.8							
138:	.0	8.8	30.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
139:	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
140:	767.7											
141:	34.1	54.2	15.3	16.2	.0	.0	.0	.0	.0	.0	.0	.0
142:	15.4	40.9	6.5	27.1	.0	.0	.8	.0	2.9	.0	.0	4.8
143:	7.7	.0	.0	.0	.0							
144:	1.9	5.8	.0	4.1	34.9	4.6	.0	.0	.0	.0	2.5	.9
145:	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
146:	.0											
147:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
148:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
149:	.0	.0	.0	.0	.0							
150:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
151:	.0	.0	.0	.0	.0	.0	.0	.0				
152:	.0											
153:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
154:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
155:	.0	.0	.0	.0	.0							
156:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
157:	.0	.0	.0	.0	.0	.0	.0	.0				
158:	.0											
159:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
160:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
161:	.0	.0	.0	.0	.0							
162:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
163:	.0	.0	.0	.0	.0	.0	.0	.0				
164:	.0											
165:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
166:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
167:	.0	.0	.0	.0	.0							
168:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
169:	.0	.0	.0	.0	.0	.0	.0	.0				
170:	87778.5											
171:	.0	2231.6	25.0	1162.9	.0	.0	.0	.0	.0	.0	.0	.0

AMMOR1

Figure III.1.6 (Cont.)

AMMOR1

172:	1459.9	1865.0	840.3	499.6	.0	.0	.0	.0	.0	.0	.0	.0
173:	320.9	15.8	.0	31.0	260.2							
174:	36.0	768.3	2165.7	.0	.0	.0	.0	2.3	17.2	12.7	.0	46.0
175:	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0				
176:	72593.8											
177:	1003.7	2228.4	586.1	1425.0	.0	.0	.0	.0	.0	.0	.0	.0
178:	651.9	2955.4	774.8	1728.1	.0	.0	75.7	.0	380.0	.0	.0	195.7
179:	173.4	.0	.0	.0	.0							
180:	43.6	166.8	5890.2	87.2	2866.7	506.8	.0	.0	.0	16.0	683.9	119.6
181:	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0				
182:	176.1											
183:	.0	5.0	.3	3.1	.0	.0	.0	.0	.0	.0	.0	.0
184:	10.7	4.7	7.2	1.5	.0	.0	.0	.0	.0	.0	.0	.0
185:	.0	.0	.0	.0	.0							
186:	.1	14.2	18.7	.0	.0	.0	.0	.0	.1	.0	.0	.2
187:	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0				
188:	66.2											
189:	1.1	3.1	.5	1.3	.0	.0	.0	.0	.0	.0	.0	.0
190:	.8	.0	.9	4.4	.0	.0	.4	.0	.4	.0	.0	.7
191:	.0	.0	.0	.0	.0							
192:	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.2	.1
193:	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0				
194:1						DAILY ENGAGED AND HIT WEAPONS						
195:	.0											
196:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
197:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
198:	.0	.0	.0	.0	.0							
199:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
200:	.0	.0	.0	.0	.0	.0	.0	.0				
201:	.0											
202:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
203:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
204:	.0	.0	.0	.0	.0							
205:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
206:	.0	.0	.0	.0	.0	.0	.0	.0				
207:	.0											
208:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
209:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
210:	.0	.0	.0	.0	.0							
211:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
212:	.0	.0	.0	.0	.0	.0	.0	.0				
213:	.0											
214:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
215:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
216:	.0	.0	.0	.0	.0							
217:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
218:	.0	.0	.0	.0	.0	.0	.0	.0				
219:	.0											
220:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
221:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
222:	.0	.0	.0	.0	.0							
223:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
224:	.0	.0	.0	.0	.0	.0	.0	.0				
225:	.0											
226:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
227:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
228:	.0	.0	.0	.0	.0							

AMMOR1

Figure III.1.6 (Cont.)

1:	30	8	4	40	8	
2:	1	12	12	5	12	8
3:	1	12	12	5	12	8
4:	1	3	2	2	99	5
5:	33	26	30	14	99	16
6:	15	14	99			
7:	43	44	45	99	99	48
8:	99	99	99	99	99	99
9:	99	99	99			
10:	1	2	3			
11:	4	5	6			
12:	1	2	3	4	5	6
13:	11500	11500	11500	11500		
14:	55	59	59	59		
15:	61	59	59	59		
16:	189	189	189	189		
17:	16	12	12	12		
18:	226	226	226	226		
19:	27	27	27	27		
20:	9	9	12	9		
21:	34	34	34	34		
22:	132	132	132	132		
23:	292	292	292	292		
24:	33	33	33	33		
25:	6	6	6	6		
26:	108	108	108	108		
27:	28	28	28	28		
28:	27	27	27	18		
29:	180					
30:	1.25286+05	1200.0	81.937	1265.5	81.937	1.23335+06
31:						
32:						
33:	1371.0	90.250	7.0062	95.855	7.0062	1367.1
34:	1752.0	20.000,	9.6187	27.695	9.6187	1679.9
35:	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
36:	324.00	1.5000	7.6000	7.5800	7.6000	244.90
37:	202.00	9.5000	9.9750	17.480	9.9750	80.600
38:	592.00	15.250	8.4312	21.495	8.4312	368.80
39:	740.00	21.750	.35625	22.035	.35625	738.20
40:	1462.0	58.250	24.225	77.630	24.225	949.40
41:	1658.0	0.00000	14.131	11.305	14.131	1151.7
42:	755.00	0.00000	46.550	37.240	46.550	182.00
43:	660.00	11.000	27.669	33.135	27.669	380.00
44:	344.00	12.000	4.5125	15.610	4.5125	224.10
45:						
46:						
47:	1229.0	15.000	60.562	63.450	60.562	692.00
48:	2496.0	25.500	115.90	118.22	115.90	1452.0
49:	1230.0	16.000	66.975	69.580	66.975	521.40
50:	347.00	17.750	14.369	29.245	14.369	256.50
51:	36.000	3.0000	2.2562	4.8050	2.2562	16.800

Figure III.1.7

52:	232.00	4.0000	7.7187	10.175	7.7187	149.90						
53:	700.00	33.250	32.894	59.565	32.894	451.90						
54:	1337.0	3.5000	49.519	43.115	49.519	719.30						
55:	1176.0	8.5000	56.406	53.625	56.406	610.70						
56:	2090.0	167.25	147.01	284.86	147.01	1145.9						
57:	2946.0	0.00000	164.94	131.95	164.94	1234.8						
58:	1330.0	31.750	59.375	79.250	59.375	833.40						
59:												
60:												
61:	433.00	2.7500	.23750	2.9400	.23750	213.50						
62:	150.00	0.00000	.11875	9.5000D-02	.11875	120.30						
63:	198.00	0.00000	.59375	.47500	.59375	161.70						
64:	20.000	0.00000	0.00000	0.00000	0.00000	17.900						
65:	160.00	.75000	.35625	1.0350	.35625	156.60						
66:												
67:												
68:	495.00	.75000	0.00000	.75000	0.00000	494.90						
69:	560.00	0.00000	0.00000	0.00000	0.00000	559.80						
70:	2223.0	3.7500	0.00000	3.7500	0.00000	2222.8						
71:	0.00000	13.500	0.00000	13.500	0.00000	0.00000						
72:	1946.0	105.25	0.00000	105.25	0.00000	1943.8						
73:	2367.0	0.00000	0.00000	0.00000	0.00000	2270.4						
74:	5476.0	1104.7	0.00000	1104.7	0.00000	5463.1						
75:	404.00	8.0000	0.00000	8.0000	0.00000	403.50						
76:	420.00	200.50	0.00000	200.50	0.00000	418.90						
77:	176.00	52.250	0.00000	52.250	0.00000	175.50						
78:	75.000	39.000	0.00000	39.000	0.00000	74.600						
79:	556.00	44.250	0.00000	44.250	0.00000	554.10						
80:												
81:												
82:	18.000	18.750	0.00000	18.750	0.00000	18.000						
83:	816.00	16.500	0.00000	16.500	0.00000	815.40						
84:	324.00	2.2500	0.00000	2.2500	0.00000	323.70						
85:	468.00	8.5000	0.00000	8.5000	0.00000	467.50						
86:	1195.0	30.250	0.00000	30.250	0.00000	1192.8						
87:	150.00	0.00000	0.00000	0.00000	0.00000	149.90						
88:	332.00	2.7500	0.00000	2.7500	0.00000	331.70						
89:	160.00	1.7500	0.00000	1.7500	0.00000	159.90						
90:												
91:												
92:												
93:												
94:												
95:												
96:												
97:												
98:	.0	.0	.0									
99:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
100:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
101:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
102:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
103:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
104:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
105:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
106:	.0	.0	.0									
107:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
108:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Figure III.1.7 (Cont.)

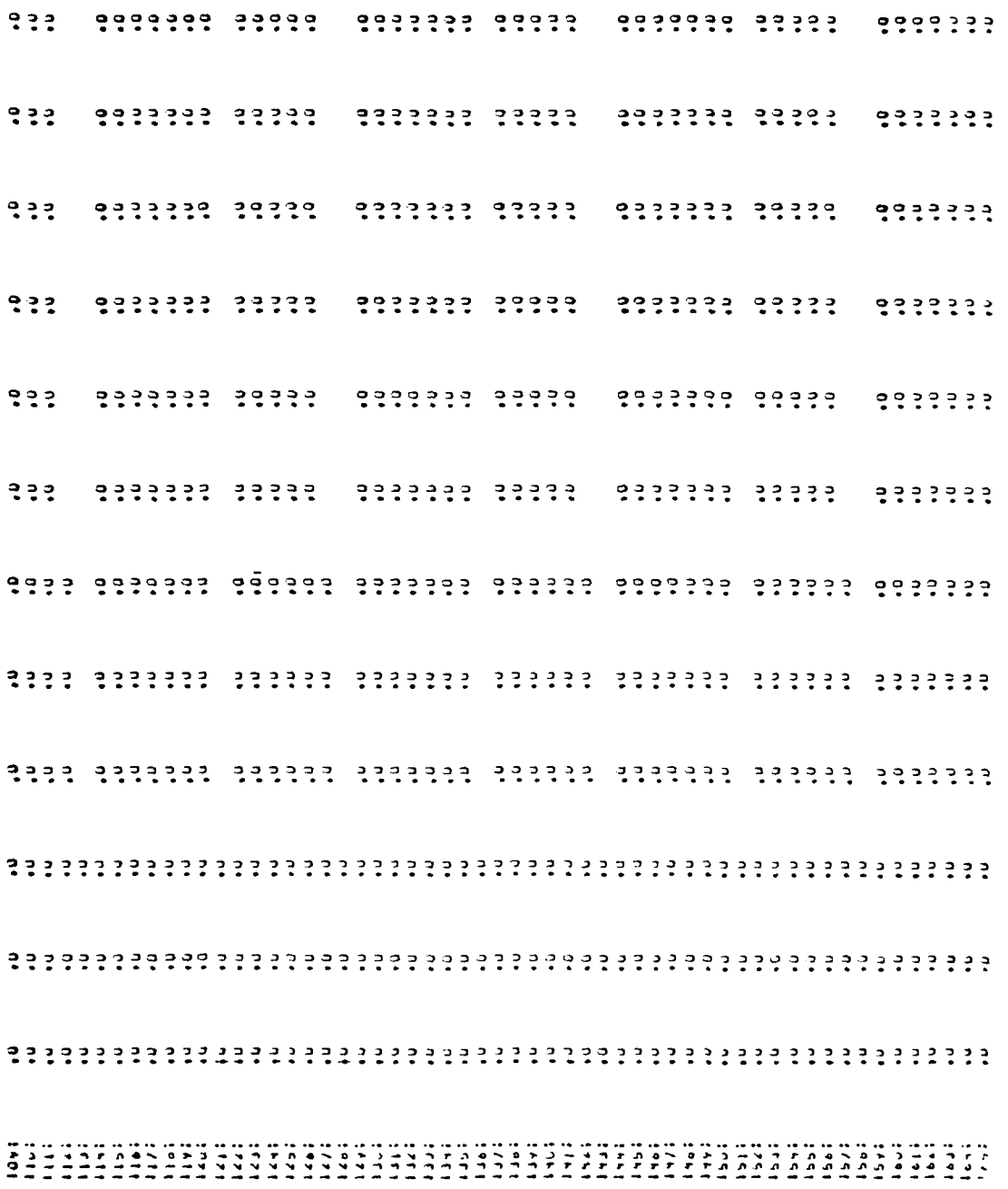


Figure III.1.7 (Cont.)

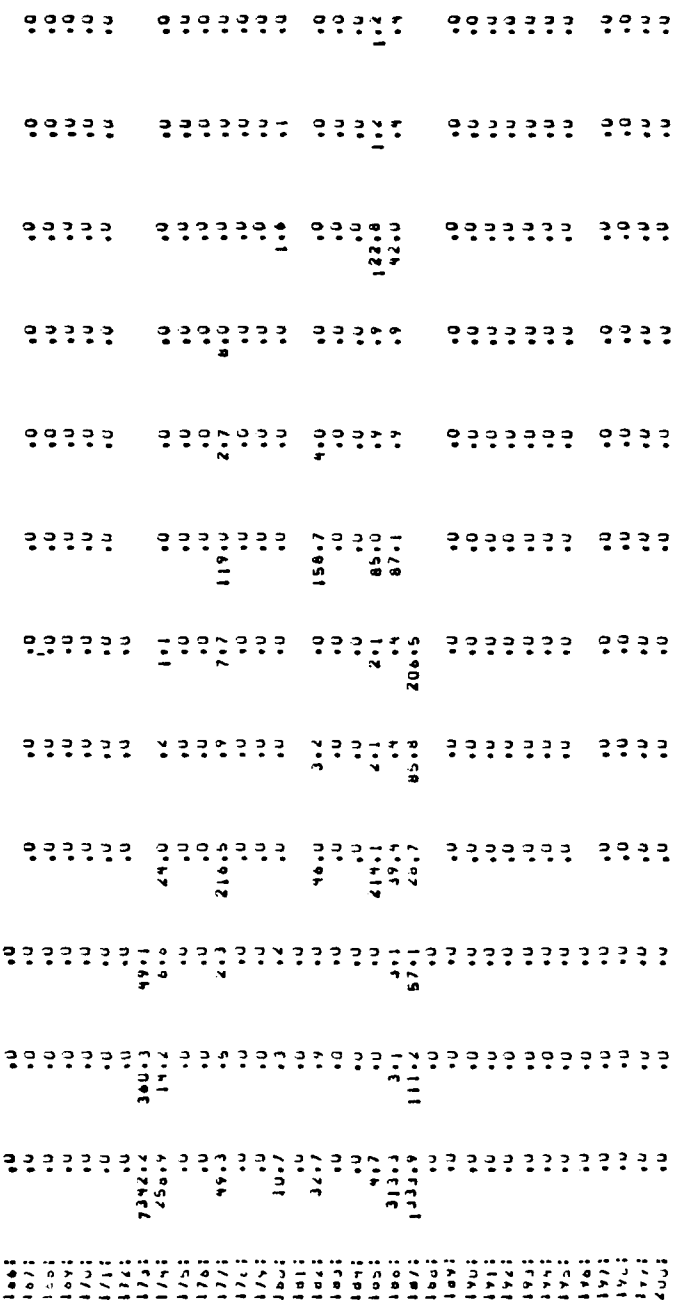


Figure III.1.7 (Cont.)

RUNREC

```
1:@XQT S6ESD6EN/   /   .CENTRBUF
2:      WEAPON DATA FOR RTD SURVIVING ASSETS READ
3:            1                 1                 1
4:    1   161961.   161946.   100.  27680.      0.  27680.  47340.   1798.   1762.   6224.   7986.    35.    14.   8035.   1
5:            1                 1                 1
6:    2   172124.   172078.   100.  27680.      0.  27680.  69714.   2926.   1089.   4194.   5283.    39.    15.   5337.   1
7:            1                 1                 1
8:    3   183568.   183556.   100.  27680.      0.  27680.  93391.   3819.    852.   3060.   3912.    40.    16.   3968.
9:            1                 1                 1
10:   4   192262.   192207.   100.  27680.      0.  27680. 113080.   5500.   1638.   6337.   7976.    43.    17.   8036.   1
11:           1                 1                 1
12:   5   216550.   216507.   100.  27680.   1798.  29478. 134688.   5393.   1644.   6149.   7793.    47.    18.   7858.   1
13:           1                 1                 1
14:   6   218338.   218235.   100.   9740.   1128.  10868. 133595.   6832.   2523.   9441.  11963.    44.    17.  12024.   2
15:           1                 1                 1
16:   7   241351.   241248.   100.   9740.    893.  10633. 133083.   8350.   2363.   8720.  11083.    48.    19.  11150.   2
17:           1                 1                 1
18:   8   262566.   262460.   100.   9740.   1682.  11422. 131751.   9330.   2609.  10073.  12681.    52.    20.  12754.   2
19:           1                 1                 1
20:   9   286381.   286220.   100.   9740.   1691.  11431. 120545.  12522.   4827.  17791.  22618.    56.    22.  22695.   4
21:           1                 1                 1
22:  10   312394.   312111.   100.   9740.   2567.  12307. 107169.  15759.   5741.  19978.  25720.    63.    24.  25806.   5
23:           1                 1                 1
24:  11   340692.   340540.   100.   9740.   2411.  12151.  91458.  19499.   6081.  21556.  27637.    70.    27.  27734.   6
25:           1                 1                 1
26:  12   354008.   353793.   100.   9740.   2661.  12401.  68765.  24766.   7855.  27202.  35057.    73.    28.  35157.   7
27:           1                 1                 1
28:  13   386350.   386151.   100.   9740.   4883.  14623.  47002.  28185.   8225.  28045.  36270.    77.    30.  36377.   8
29:           1                 1                 1
30:  14   386350.   386116.   100.  10259.   5809.  16063.  26039.  30960.   8500.  28457.  36957.    79.    30.  37066.   8
31:           1                 1                 1
32:  15   387745.   387427.   100.  10259.   6151.  16410.   1375.  34375.   9487.  31564.  41051.    79.    30.  41160.   9
33:           1                 1                 1
34:  16   389605.   374204.    96.  10259.   7927.  18186.   1523.  34188.   7662.  25354.  33016.    78.    30.  33125.   7
35:           1                 1                 1
36:  17   389605.   356410.    91.  10259.   8302.  18561.   1555.  34360.   8400.  27824.  36224.    75.    29.  36328.   8
37:           1                 1                 1
38:  18   389605.   346291.    89.  10259.   8579.  18838.   1578.  32555.   6702.  22137.  28839.    71.    27.  28938.   6
39:           1                 1                 1
40:  19   389606.   335636.    86.  10259.   9566.  19825.   1660.  30081.   7023.  23286.  30309.    69.    27.  30405.   7
41:           1                 1                 1
42:  20   389606.   327829.    84.  10259.   7740.  17999.   1507.  28415.   6007.  19865.  25872.    67.    26.  25965.   6
43:           1                 1                 1
44:  21   389608.   324770.    83.  11840.   8475.  20315.   1701.  25344.   5337.  17759.  23096.    67.    26.  23189.   5
45:           1                 1                 1
46:  22   389608.   321003.    82.  11840.   6773.  18613.   1559.  23841.   5204.  17232.  22436.    66.    25.  22528.   5
47:           1                 1                 1
48:  23   390659.   322748.    83.  11840.   7092.  18932.   1586.  21025.   4210.  13916.  18126.    66.    25.  18217.   4
49:           1                 1                 1
50:  24   390659.   325445.    83.  11840.   6074.  17914.   1500.  18576.   3559.  11654.  15213.    66.    25.  15304.   3
51:           1                 1                 1
52:  25   390659.   326075.    83.  11840.   5404.  17244.   1444.  17102.   3864.  12722.  16586.    67.    26.  16678.   3
53:           1                 1                 1
54:  26   390659.   328563.    84.  11840.   5271.  17111.   1433.  15323.   3425.  11124.  14549.    67.    26.  14641.   3
55:           1                 1                 1
56:  27   390659.   331278.    85.  11840.   4276.  16116.   1350.  14269.   3155.  10244.  13399.    67.    26.  13491.   3
57:           1                 1                 1
```

Figure III.1.8

RUNREC

58:	28	390659.	334155.	85.	11840.	3625.	15465.	1295.	13692.	2980.	9574.	12555.	68.	26.	12649.	3
59:		1	1		1											
60:	29	390659.	338121.	87.	10570.	3930.	14500.	1214.	12336.	2505.	8022.	10527.	68.	26.	10622.	2
61:		1	1		1											
62:	30	390659.	340360.	87.	10570.	3492.	14062.	1178.	11685.	2772.	8998.	11770.	69.	27.	11866.	2
63:		1	1		1											
64:	31	390659.	338921.	87.	10570.	3222.	13792.	1155.	12101.	3568.	11596.	15164.	70.	27.	15260.	3
65:		1	1		1											
66:	32	390659.	338760.	87.	10570.	3048.	13618.	1141.	12358.	3236.	10468.	13704.	70.	27.	13800.	3
67:		1	1		1											
68:	33	390659.	337778.	86.	10570.	2574.	13144.	1101.	13169.	3316.	10761.	14077.	68.	26.	14171.	3
69:		1	1		1											
70:	34	390659.	336944.	86.	10570.	2841.	13411.	1123.	13717.	3321.	10812.	14133.	68.	26.	14228.	3
71:		1	1		1											
72:	35	390659.	339880.	87.	10570.	3638.	14208.	1190.	12759.	2612.	8502.	11114.	68.	26.	11209.	2
73:		1	1		1											
74:	36	390659.	334227.	86.	9060.	3306.	7366.	617.	12700.	3178.	10320.	13499.	69.	26.	13593.	3
75:		1	1		1											
76:	37	390659.	331265.	85.	9060.	3384.	7444.	623.	11818.	2434.	7876.	10310.	68.	26.	10404.	2
77:		1	1		1											
78:	38	390659.	327761.	84.	9060.	3389.	7449.	624.	11068.	2573.	8295.	10868.	66.	25.	10960.	2
79:		1	1		1											
80:	39	390659.	325956.	83.	9060.	2680.	6740.	564.	10480.	2027.	6495.	8522.	65.	25.	8612.	2
81:		1	1		1											
82:	40	390659.	322837.	83.	9060.	3247.	7307.	612.	9739.	2439.	7851.	10291.	66.	25.	10382.	2
83:		1	1		1											
84:	41	390659.	319976.	82.	9060.	2502.	6562.	550.	9521.	2220.	7181.	9401.	65.	25.	9491.	2
85:		1	1		1											
86:	42	390659.	319106.	82.	9060.	2640.	6700.	561.	8733.	1787.	5689.	7475.	64.	25.	7565.	1
87:		1	1		1											
88:	43	390659.	318597.	82.	9060.	2092.	6152.	515.	8293.	1587.	5036.	6623.	64.	25.	6712.	1
89:		1	1		1											
90:	44	390659.	324623.	83.	13399.	2505.	15904.	1332.	7999.	2147.	6829.	8976.	65.	25.	9066.	2
91:		1	1		1											
92:	45	390659.	329101.	84.	13399.	2285.	15684.	1314.	8426.	2645.	8491.	11136.	66.	25.	11228.	2
93:		1	2		1											
94:	1	25.	18.	74.	0.	0.	0.	0.	3.	2.	4.	6.	1.	0.	7.	
95:		1	2		1											
96:	2	25.	16.	66.	0.	0.	0.	0.	4.	0.	0.	1.	1.	0.	2.	
97:		1	2		1											
98:	3	79.	69.	87.	0.	3.	3.	0.	6.	0.	0.	1.	3.	0.	4.	
99:		1	2		1											
100:	4	329.	288.	87.	0.	2.	2.	0.	29.	3.	6.	9.	22.	1.	33.	
101:		1	2		1											
102:	5	329.	229.	69.	0.	16.	16.	0.	47.	15.	40.	54.	19.	2.	75.	
103:		1	2		1											
104:	6	437.	232.	53.	0.	31.	31.	0.	66.	31.	84.	115.	19.	2.	136.	
105:		1	2		1											
106:	7	779.	541.	69.	0.	66.	66.	0.	50.	19.	46.	65.	32.	3.	99.	
107:		1	2		1											
108:	8	1425.	1142.	80.	113.	50.	163.	0.	108.	36.	93.	129.	71.	7.	208.	
109:		1	2		1											
110:	9	1909.	1548.	81.	113.	108.	221.	0.	153.	56.	138.	193.	97.	9.	299.	
111:		1	2		1											
112:	10	2355.	1919.	81.	112.	153.	265.	0.	195.	55.	134.	189.	181.	11.	340.	
113:		1	2		1											
114:	11	2731.	2133.	78.	112.	195.	307.	0.	242.	85.	211.	296.	157.	16.	469.	

Figure III.1.8 (Cont.)

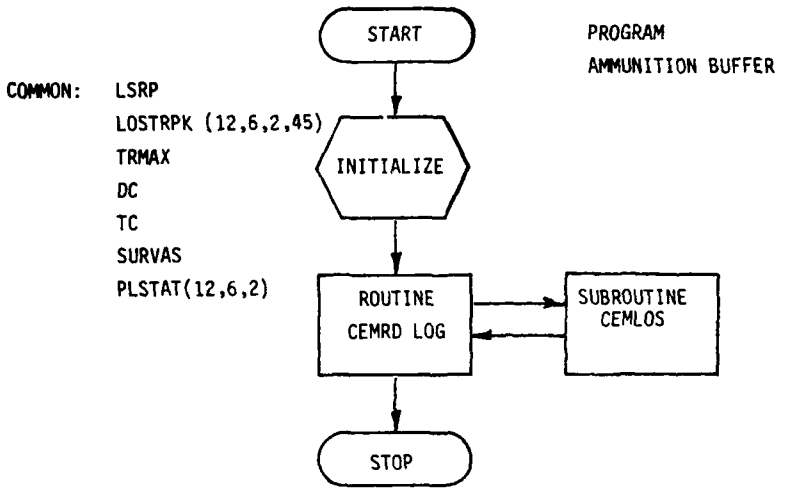


Figure III.1.9

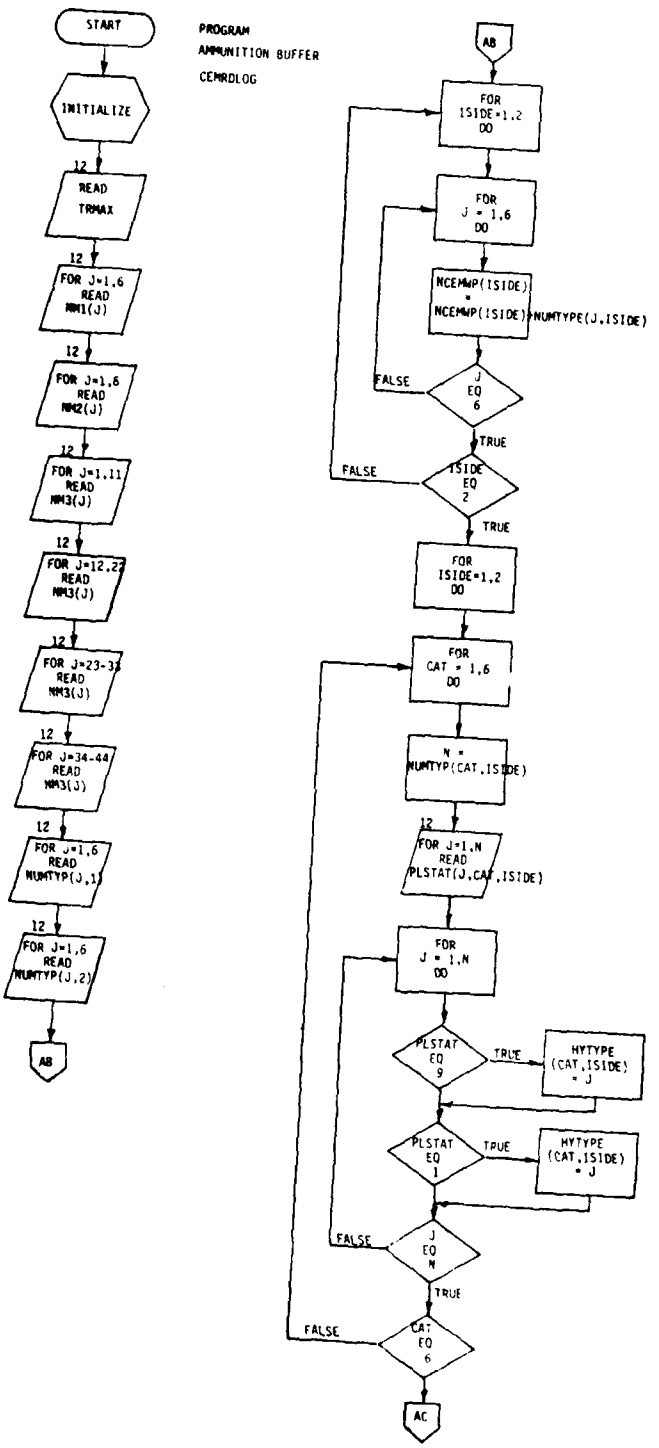


Figure III.1.10

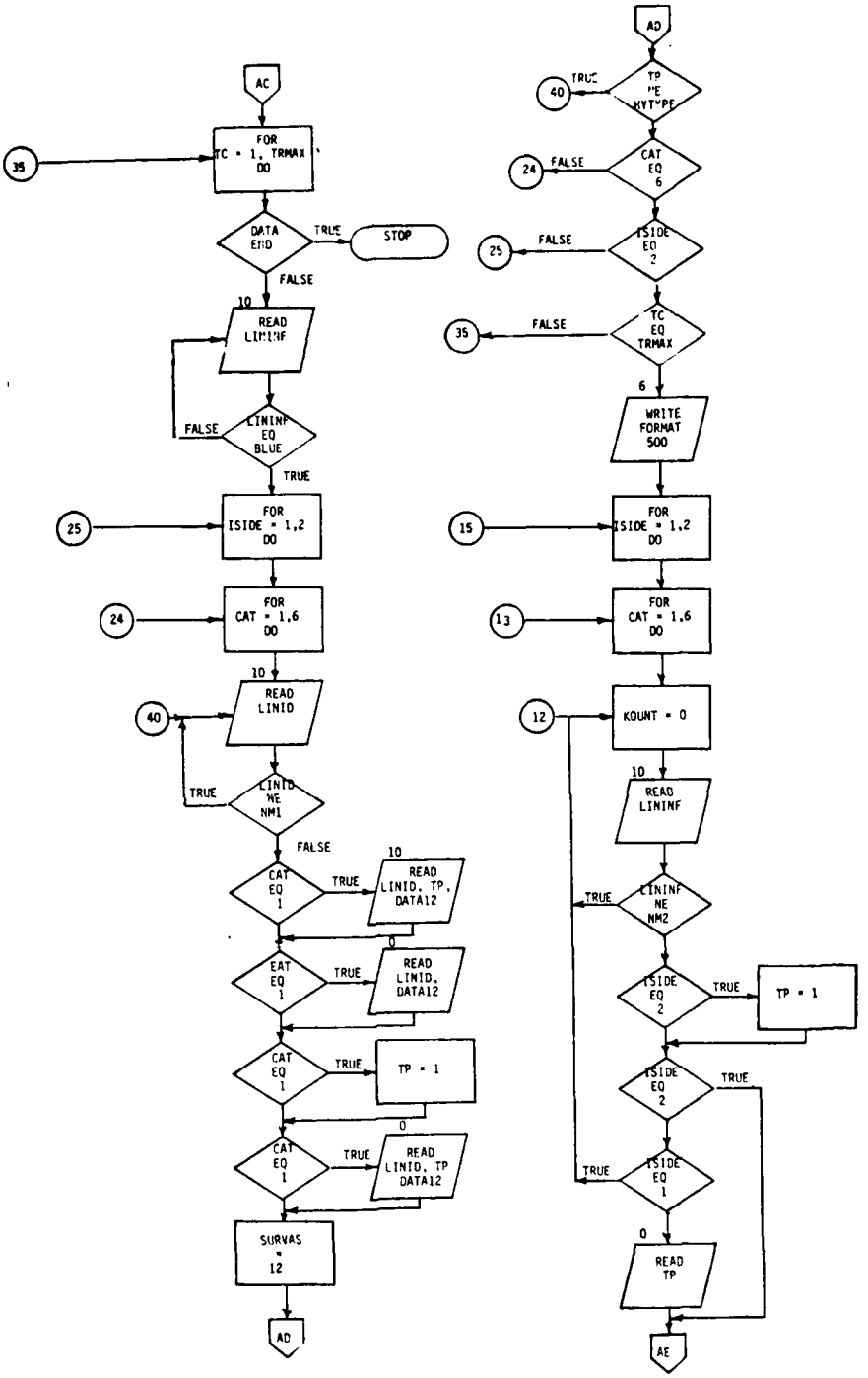


Figure III.1.10 (Cont.)

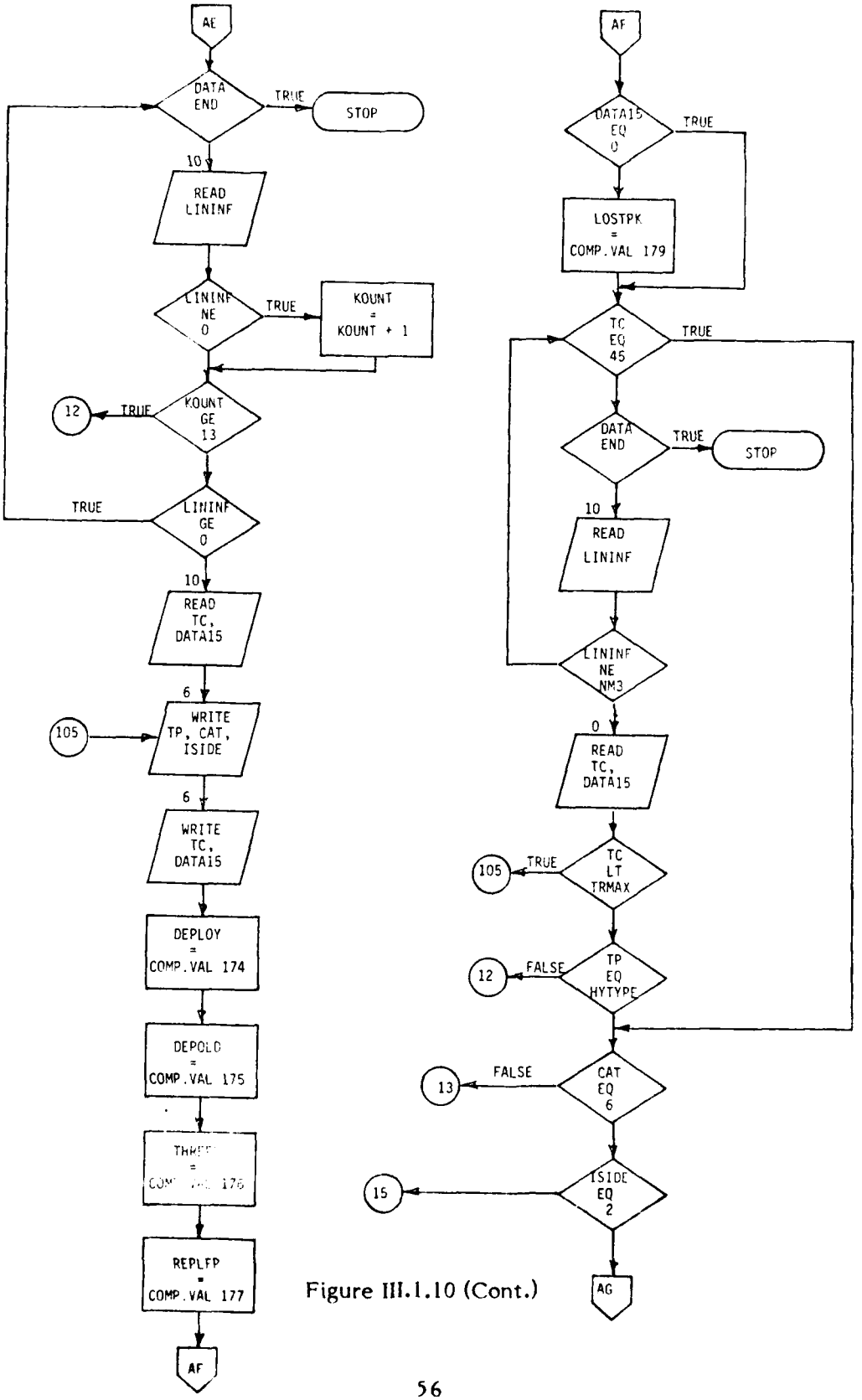


Figure III.1.10 (Cont.)

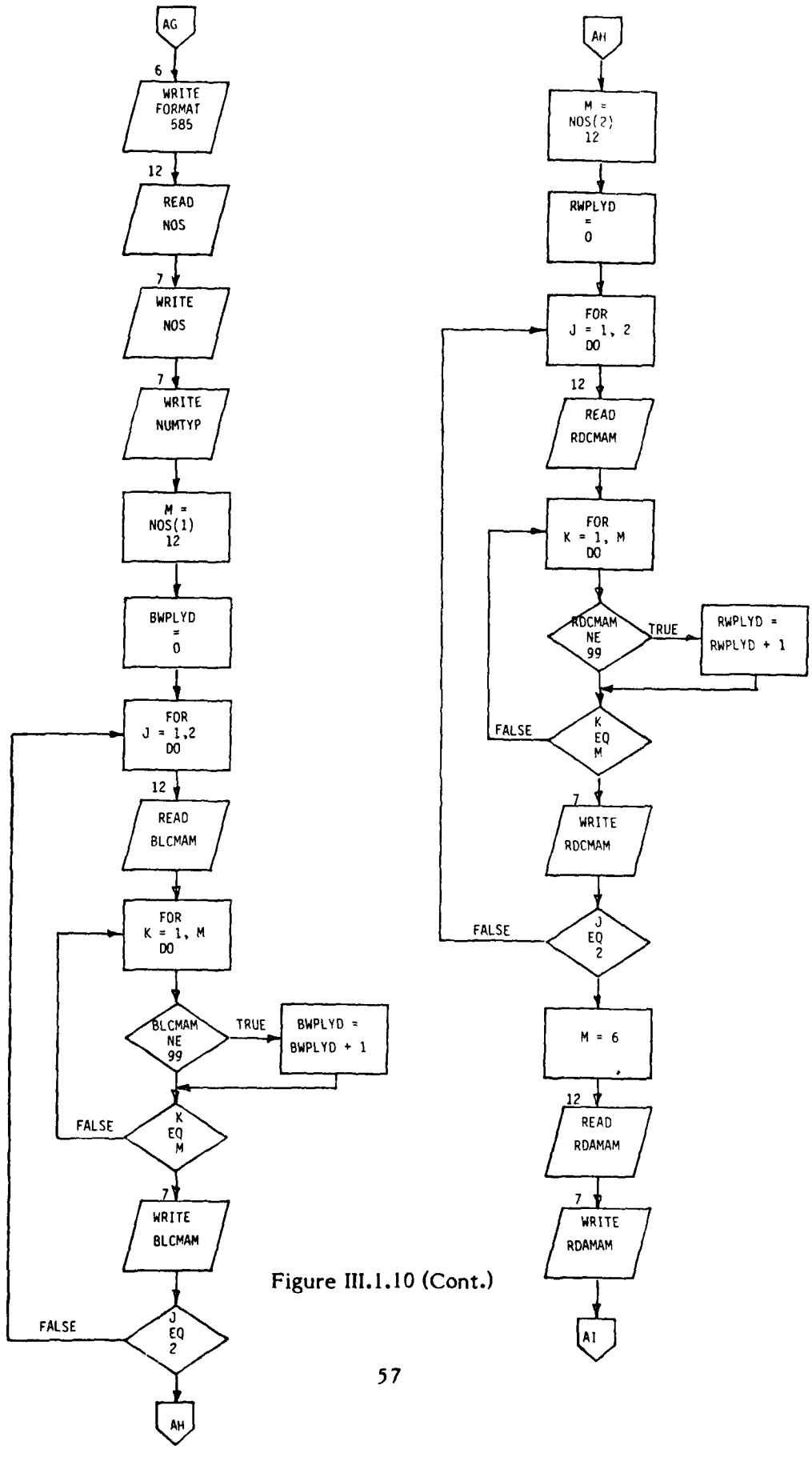


Figure III.1.10 (Cont.)

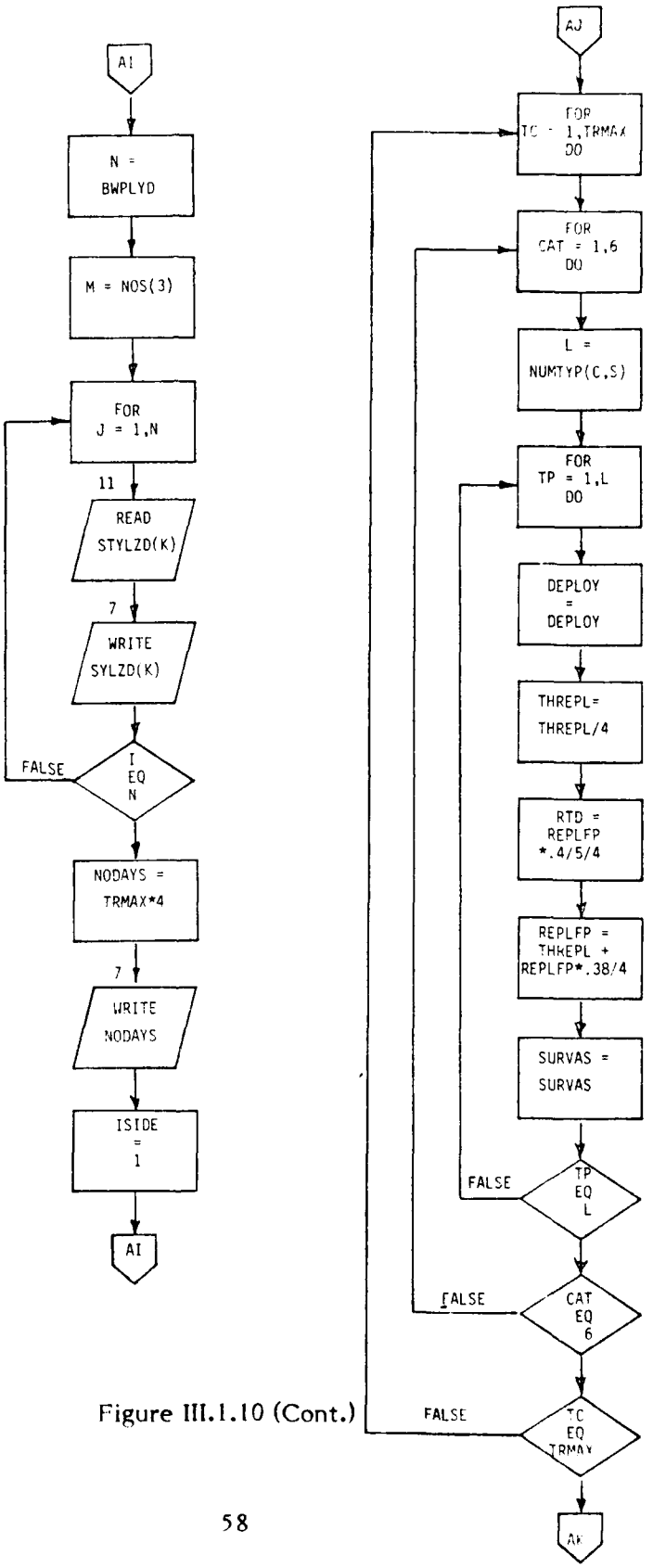


Figure III.1.10 (Cont.)

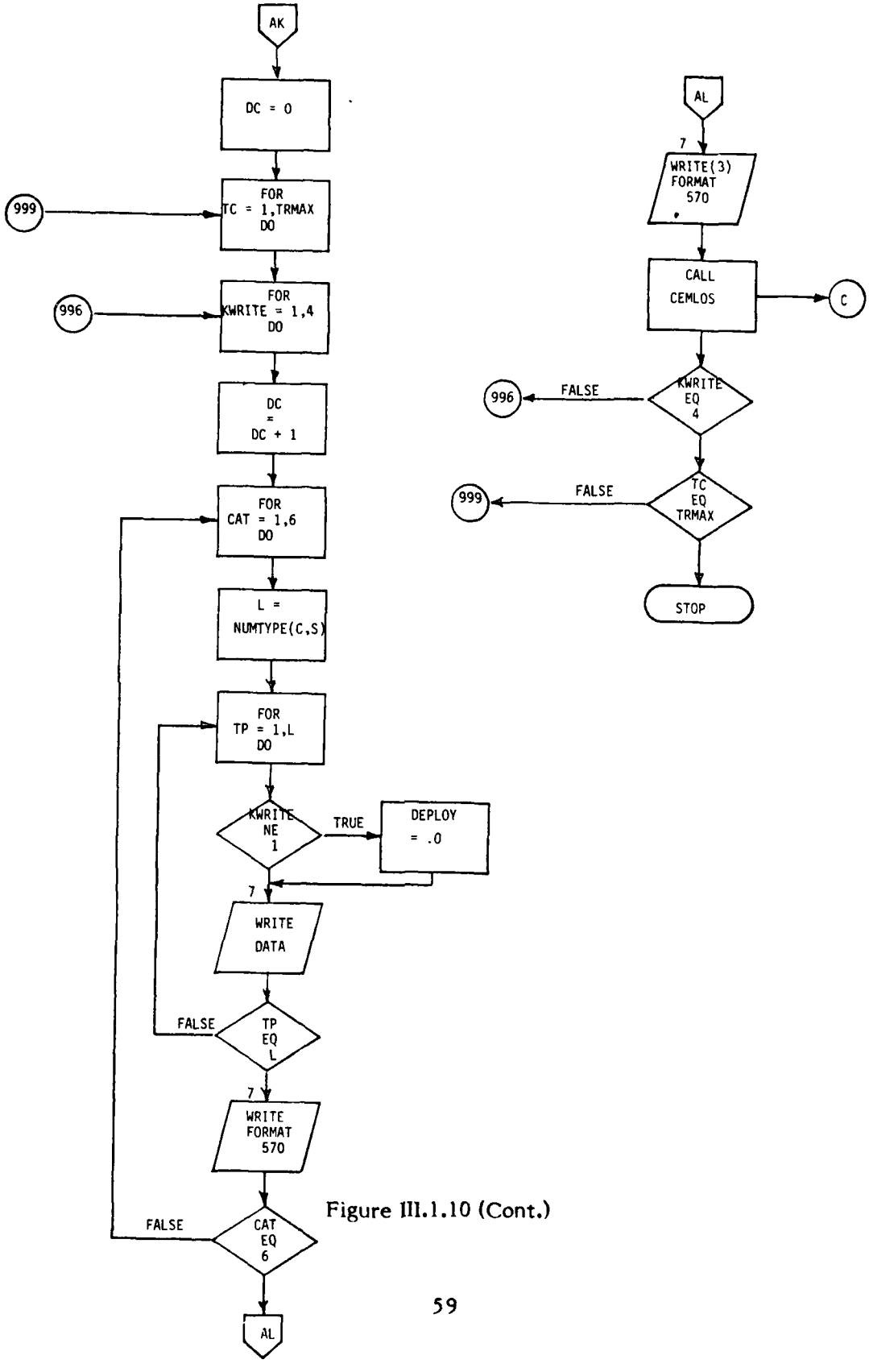


Figure III.1.10 (Cont.)

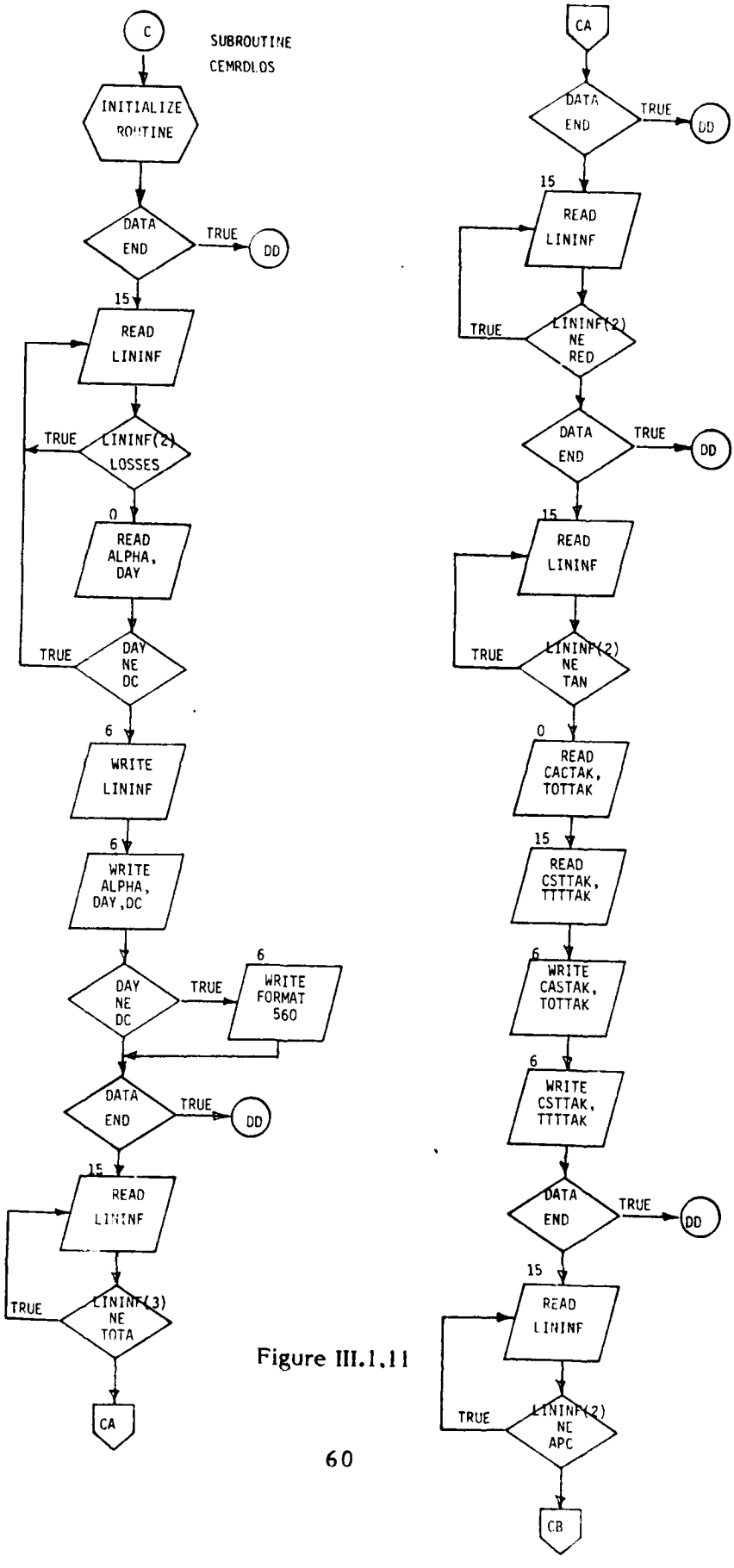


Figure III.1.11

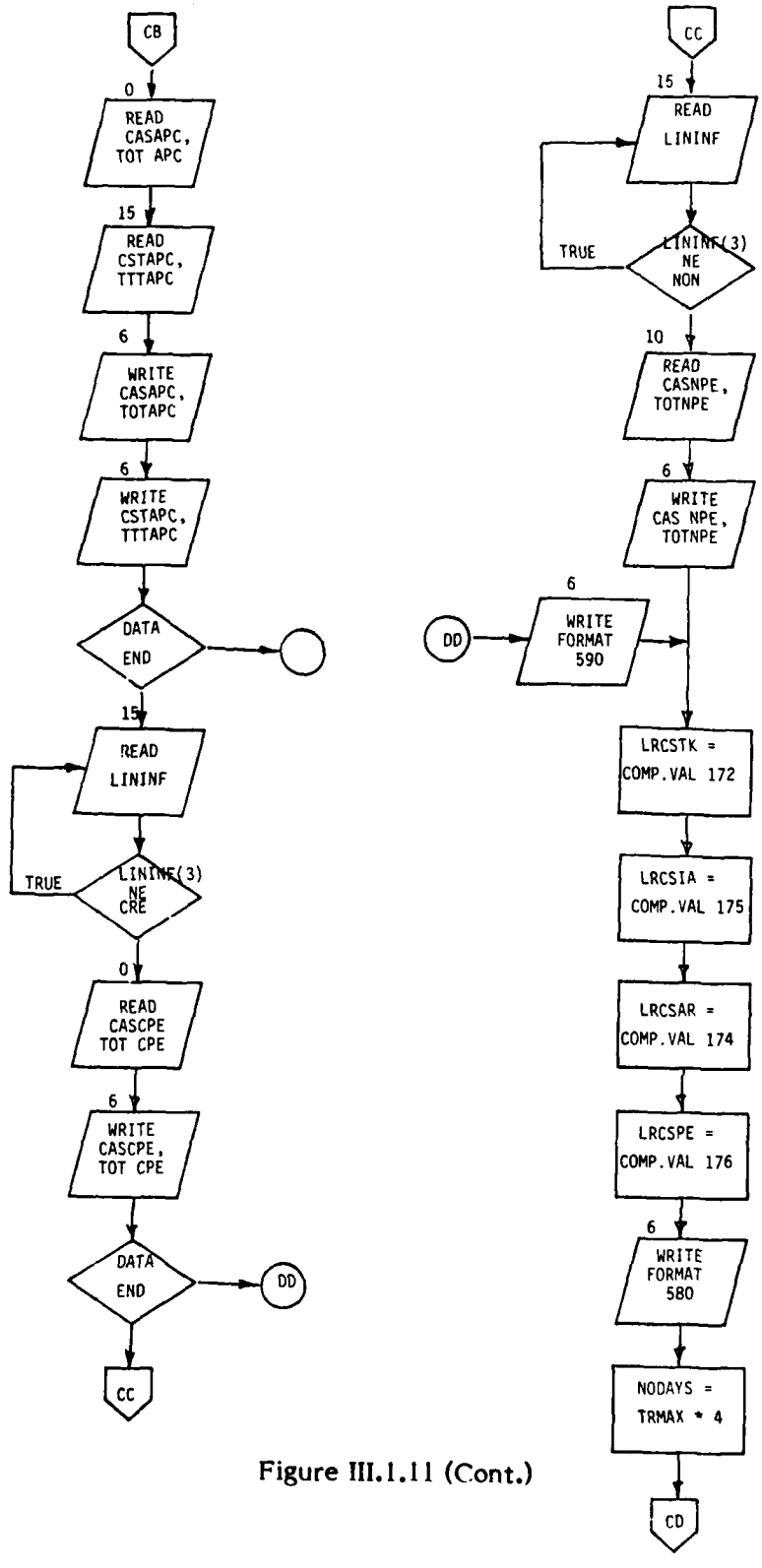


Figure III.1.11 (Cont.)

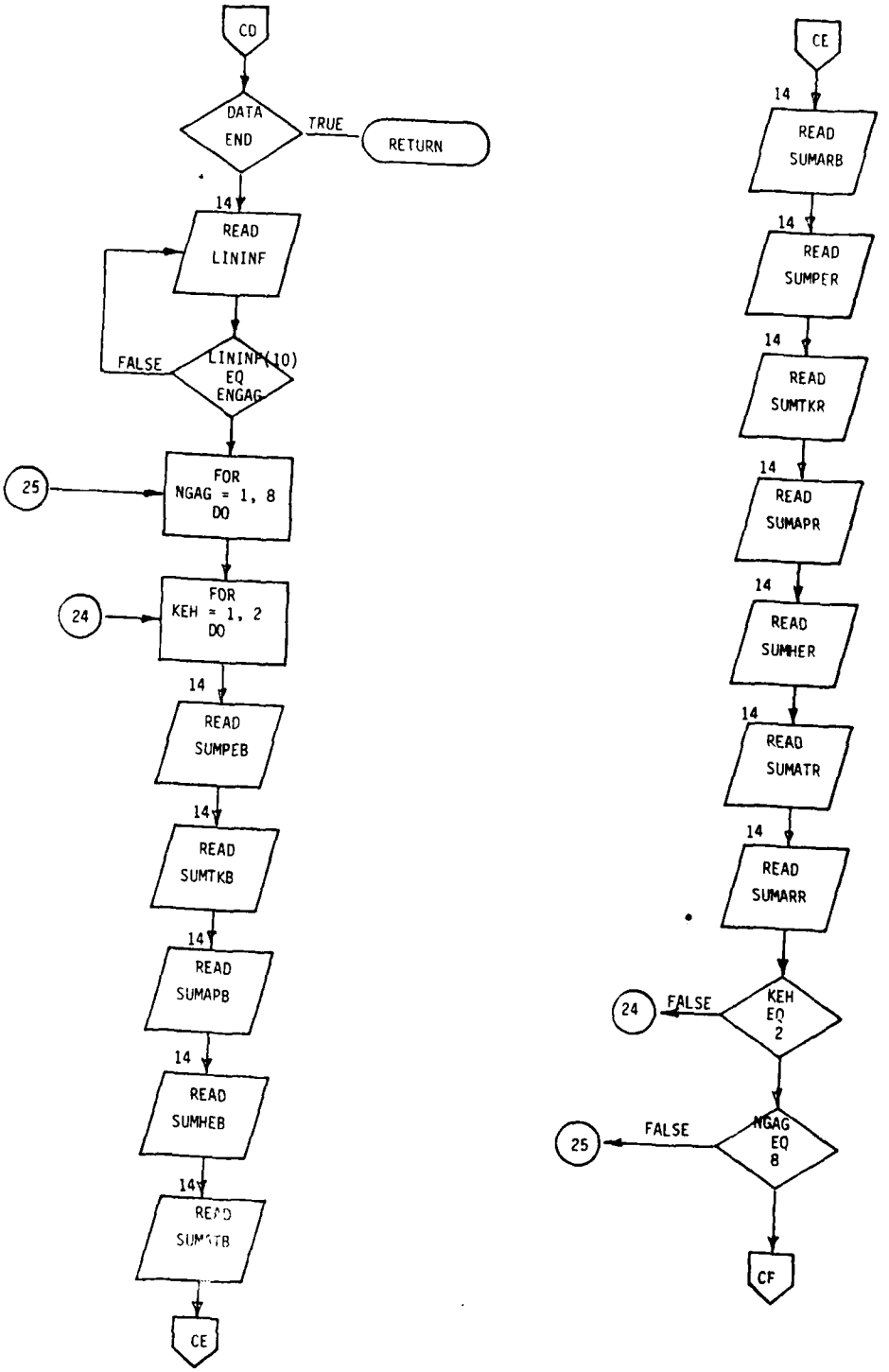


Figure III.1.11 (Cont.)

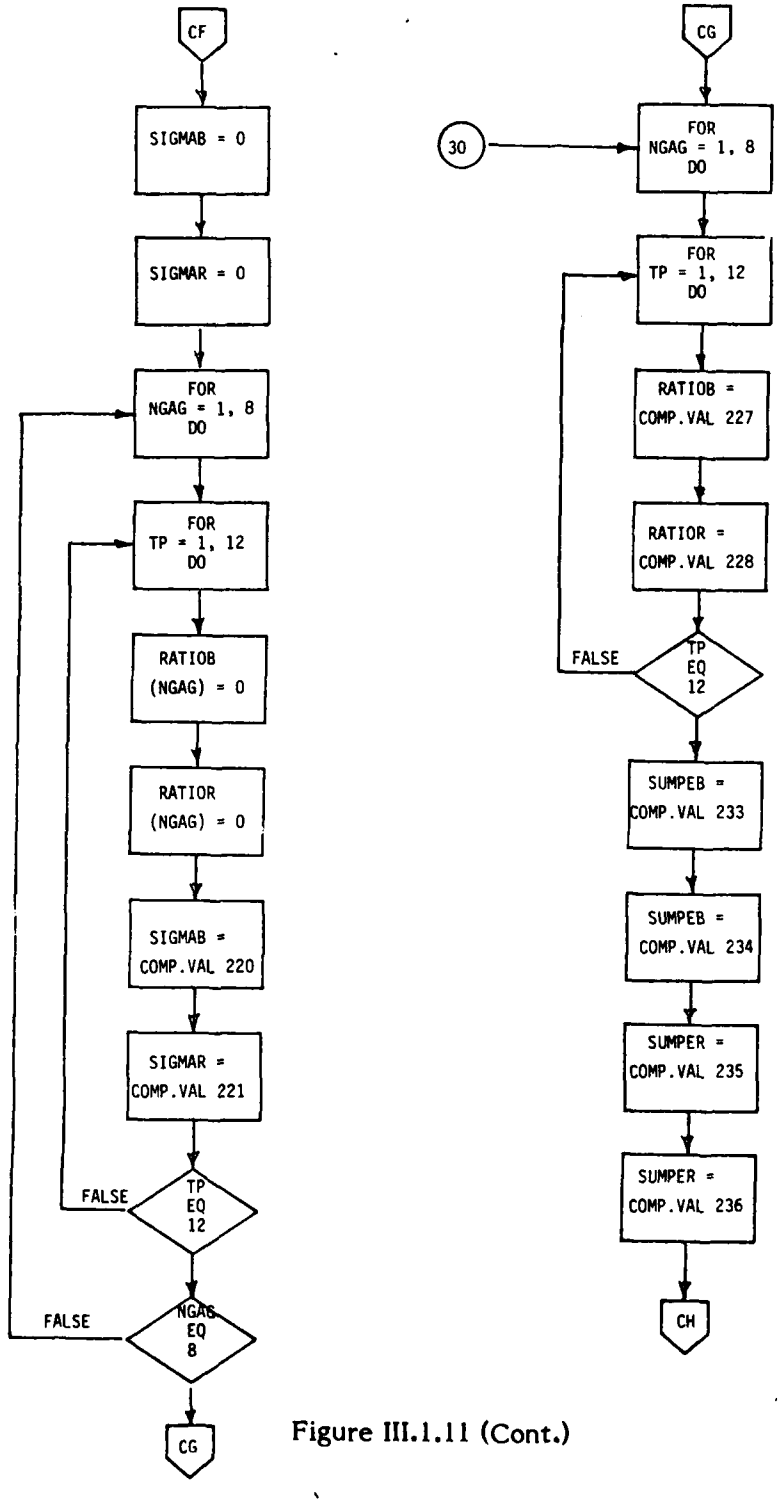
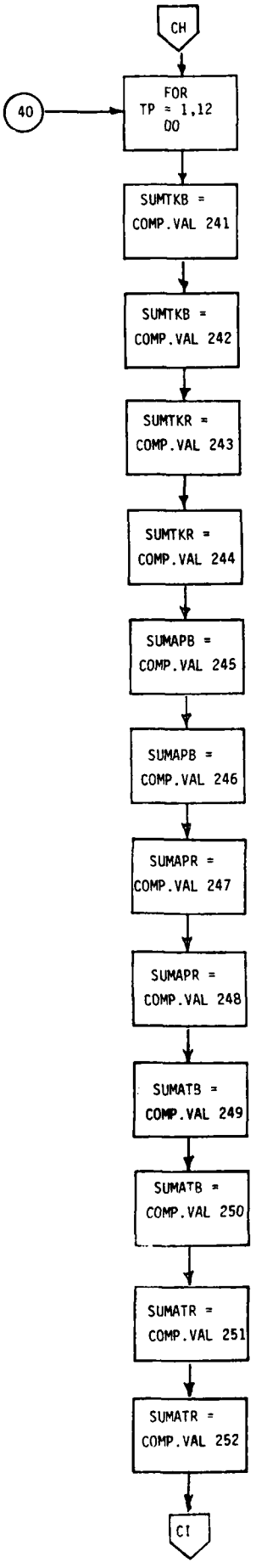


Figure III.1.11 (Cont.)



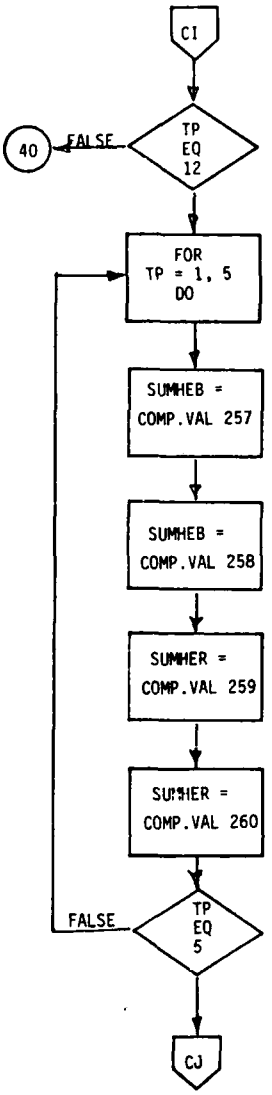


Figure III.1.11 (Cont.)

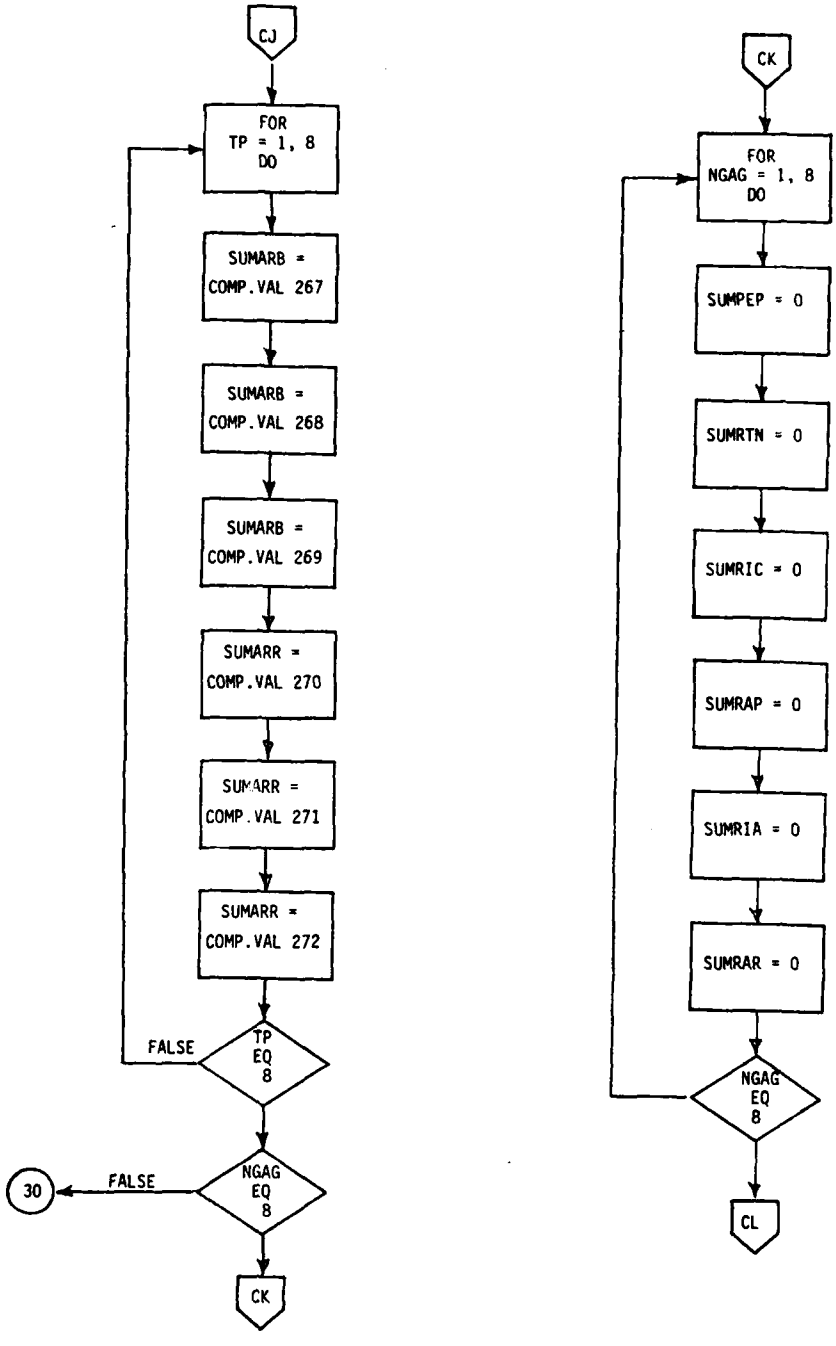


Figure III.1.11 (Cont.)

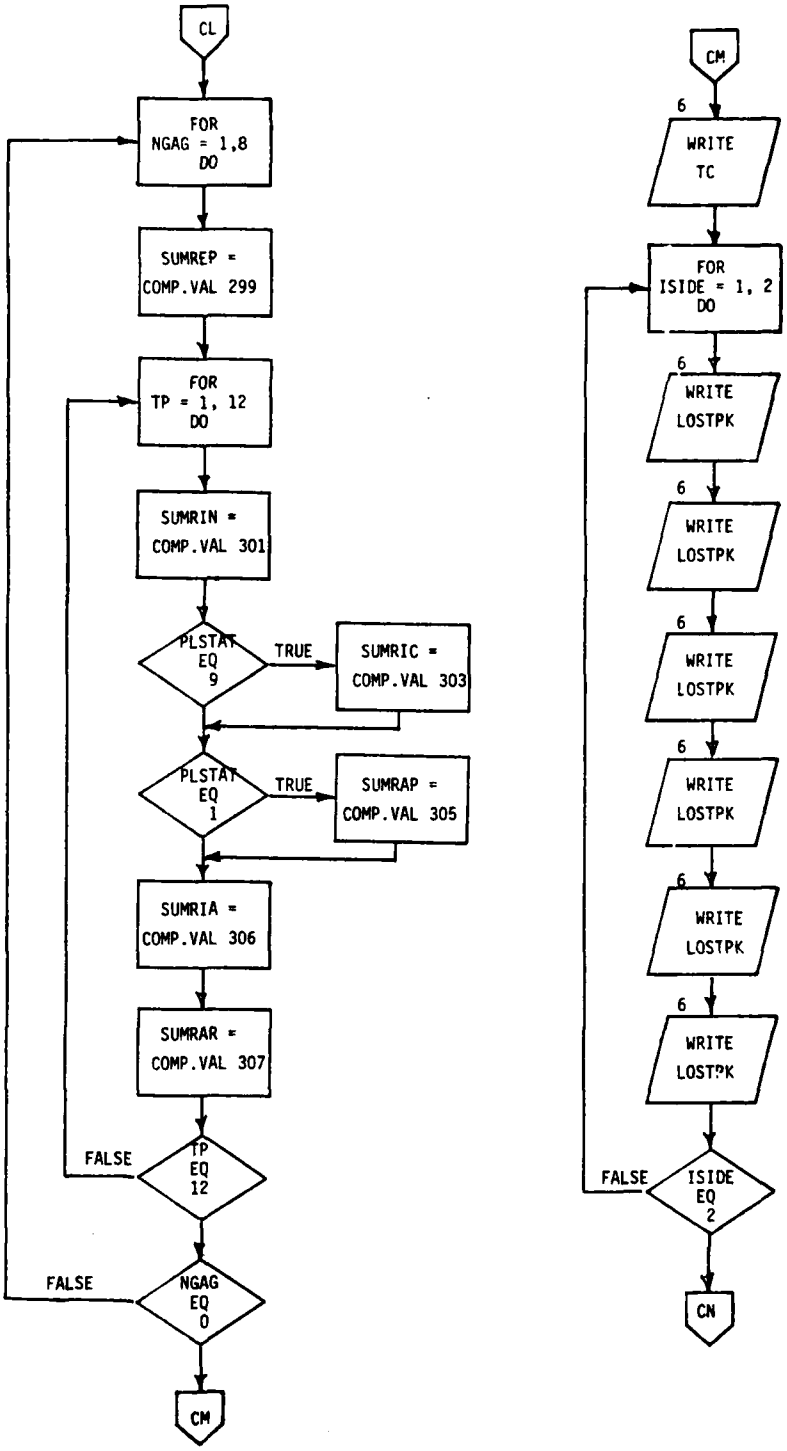


Figure III.1.11(cont.)

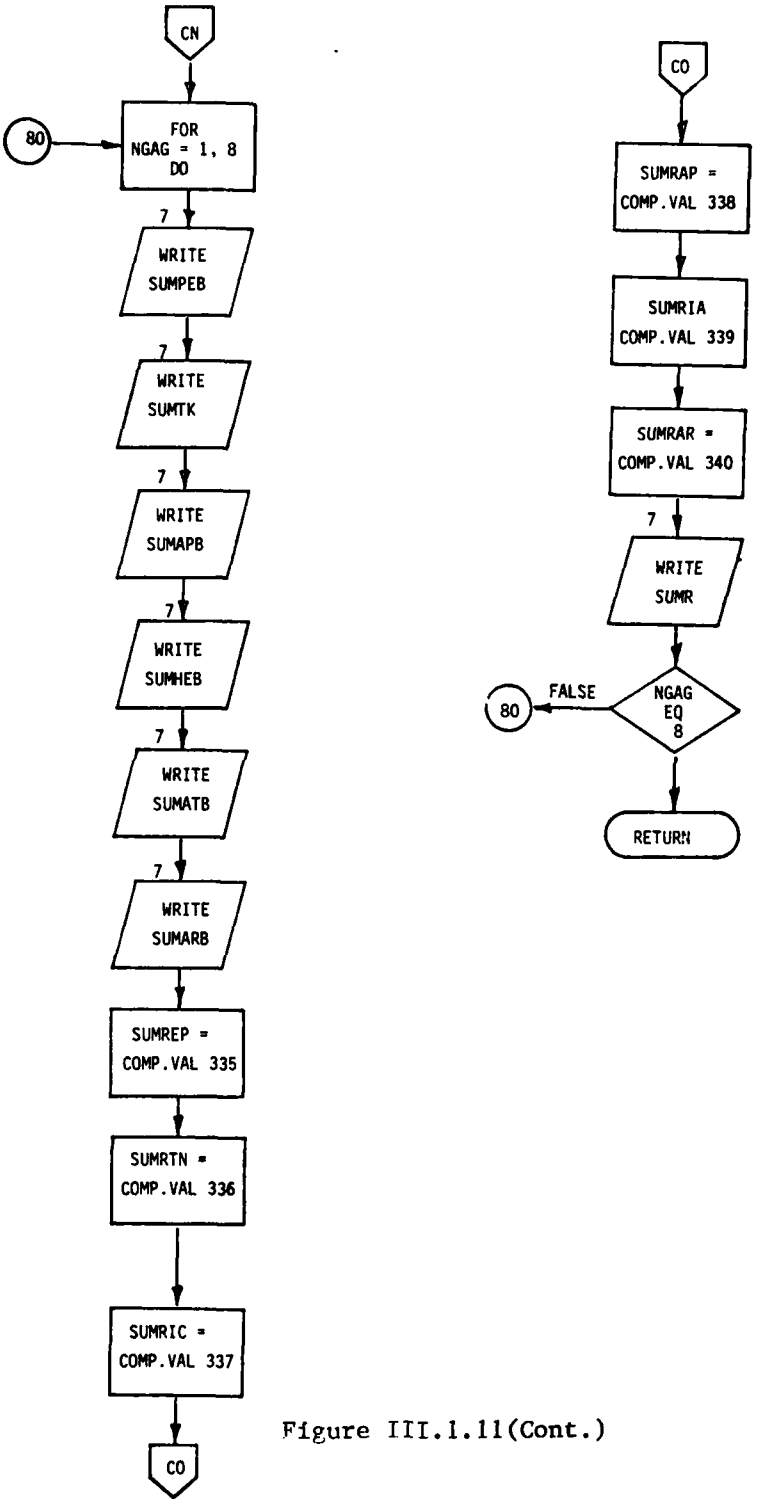


Figure III.1.11(Cont.)

```
UNCLASSIFIED.ELFMANN(1).CEMRDLOG/18JUL80
      1       C*** *** *** *** *** *** *** *** *** *** *** *****
      2       C  AUTHOR     ANDREW N.CARRAS
      3       C PURPOSE.
      4       C           THIS PROGRAM ACTS AS A BUFFER BETWEEN CEM,CUSAGE AND THE
      5       C               WARRAMP AMMORATES POST PROCESSOR. THE MAIN
      6       C               ROUTINE CEMREDLOG READS THE CEM LOGISTICS REPORT AND
      7       C               STORES ALL REQUIRED VARIABLES TO ELIMINATE REWINDING
      8       C               BECAUSE OF LOGREP'S FORMATTING. IT ALSO CALLS CEMRDLOS
      9       C               TO READ TWO TWO ADDITIONAL CEM OUTOUT FILES (AMMOT &
     10       C               LOSSREP) WRITING OUT THE REQUIRED VARIABLES DAILY.
     11       C         A)OUTPUT FROM CEM IS IN LOGICAL UNIT 10, AND 37LOGREP.
     12       C         B)OUTPUT FROM APP IS IN LOGICAL UNIT 11, AND 37ESDGEN.TRCONS
     13       C         C)CEM/APP MAPPING DATA IS IN LOGICAL UNIT 12, AND 37ESDGEN.TRMAP
     14       C         D)INPUT TO THE AMMORATES MODEL IS WRITTEN ON LOGICAL UNIT 7.
     15       C         E)OUTPUT TO 6 IS FOR CHECK PURPOSES ONLY AND IS SAVED IN A
     16       C           BREAKPOINT FILE FOR ANALYSIS IF REQUIRED.  THIS TECHNIQUE
     17       C           IS USED THROUGHOUT THE APP.
     18       C VARIABLE DEFINITIONS.
     19       C           BLCMAM   MAPPING OF BLUE CEM/APP WPNS
     20       C           BWPLYD   NO OF BLUE WEAPONS PLAYED(APP)
     21       C           CAT      WEAPON CATEGORY
     22       C             1 = PERSONNEL
     23       C             2 = TANKS
     24       C             3 = LIGHT ARMOR
     25       C             4 = HELICOPTERS
     26       C             5 = A/T MORTARS
     27       C             6 = ARTY
     28       C           DATA12   DATA POINTS OF LOGREP FILE, 12 TO A LINE
     29       C           DATA15   DATA POINTS OF LOGREP FILE, 15 TO A LINE
     30       C           DEPLOY   DEPLOYED  WEAPONS
     31       C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
     32       C           DEPOLD   AUTHORIZED WEAPONS IN PREVIOUS THEATER CYCLE
     33       C           HYTYPE   HIGHEST TYPE IN CATEGORY
     34       C                    (CATEGORY,SIDE)
     35       C           ISIDE    1 = BLUE, 2 = RED
     36       C           LINID    ALPHANUMERIC READ WORD, 4 CHARACTERS
     37       C           LININF   ALPHANUMERIC READ WORD, 6 CHARACTERS
     38       C           LOSTPK   RATIO K-KILL/TOTAL COMBAT LOSSES (BLUE & RED)
     39       C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
     40       C           NCEMWP   ARRAY,TOTAL TYPES CEM WPNS, EACH SIDE
     41       C           NODAYS   NUMBER OF DAYS SIMULATED
     42       C           NOS      ARRAY, NO OF WPNS (BOOK), SAMPLES, ESOS, ENGAGEMENTS
     43       C                    (1-6)
     44       C           NM1      DATA ARRAY DEFINING CATEGORY ALPHANUMERICS
     45       C           NM2      DATA ARRAY DEFINING CATEGORY ALPHANUMERICS
     46       C           NM3      DATA ARRAY DEFINING CYCLE ALPHANUMERICS
     47       C           NUMTYP   ARRAY, NO OF WPNS TYPES IN EACH CATEGORY (CEMM/L)
     48       C                    (CATEGORY,SIDE)
     49       C           PLSTAT   ARRAY, STATUS OF WEAPON
     50       C                    1 = PLAYED, 0 = NOT PLAYED
     51       C                    9 = RED ICV, 1 = RED APC (FOR CATEGORY 3)
     52       C                    (TYPE,CATEGORY,SIDE)
     53       C           REAMCM   MAPPING OF RED AMMO/CEMM/L WPNS
     54       C           REDCMAM  MAPPING OF RED CEMM/L/AMMO/WPNS
     55       C           REPLEP    WEAPON REPLACEMENTS FROM DS MAINTENANCE POOL
     56       C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
```

Figure III.1.12

```
C           REPLTP   WEAPONS TO POOL FROM OS MAINTENANCE
C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
C           RTD      WEAPONS RETURNED TO DUTY
C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
C           RWPLYD   NO OF RED WEAPONS PLAYED(TK)
C           STYLZD   NO OF STYLIZED SAMPLES/WEAPON
C           SURVAS   WEAPON SURVIVING ASSETS
C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
C           TC       THEATER CYCLE COUNTER
C           TRMAX    MAXIMUM NUMBER OF THEATER CYCLES
C           THREPL   THEATER REPLACEMENT WEAPONS
C                    (TYPE,CATEGORY,SIDE,THEATER CYCLE)
C           TP       TYPE COUNTER
C***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  *****
C
      DIMENSION LININF(22),NUMTYP(6,2),NOS(5),NCEMWP(2)
     *    ,BLCMAM(30),RDCMAM(10),RDAMCM(40),STYLZD(9)
     *    ,DEPLOY(12,6,2,45),THREPL(12,6,2,45),RTD(12,6,2,45)
     *    ,REPLFP(12,6,2,45),SURVAS(12,6,2,45),MYTYPE(6,2)
     *    ,DATA12(12),DATA15(15),DEPOLD(12,6),NM1(6),NM2(6),NM3(44)
      COMMON/LSRP/LOSTPK(12,6,2,45),TRMAX,DC,TC,SURVAS,PLSTAT(12,6,2)
      REAL LININF,LINID,DEPLOY,DEPOLD,THREPL,RTD,REPLFP,SURVAS
     *    ,DATA12,DATA15,NM1,NM2,NM3,LOSTPK
      INTEGER NUMTYP,SIDE,NOS,NCEMWP,BLCMAM,RDCMAM,RDAMCM
     *    ,RWPLYD,RWPLYD,STYLZD,TC,TP,CAT,TRMAX,NODAYS,DC,PLSTAT,MYTYPE
C
C***FORMAT STATEMENTS
C
  590 FORMAT(57X,I3)
  585 FORMAT(5X,47HWEAPON DATA FOR DEPS, REPS, TO & FROM POOL READ)
  580 FORMAT(5X,41HWEAPON DATA FOR RTD SURVIVING ASSETS READ)
  570 FORMAT(/132A)
  560 FORMAT(I5,2(F10.0),F7.0,12(F8.0))
  550 FORMAT(A4,4X,F14.0,11(F10.0))
  540 FORMAT(6A4)
  530 FORMAT()
  520 FORMAT(I6,2(F11.0),13(F8.0))
  515 FORMAT(2013)
  510 FORMAT(A4,2X,I4,F14.0,11(F10.0))
  500 FORMAT(22A6)
C
C***READ ALPHA CONSTANTS, CEM WEAPONS/CATEGORY, WEAPONS PLAYED
C***AND HIGHEST TYPE
C
      READ(12,515)TRMAX
      READ(12,540)(NM1(J),J = 1,6)
      READ(12,500)(NM2(J),J = 1,6)
      READ(12,500)(NM3(J),J = 1,11)
      READ(12,500)(NM3(J),J = 12,22)
      READ(12,500)(NM3(J),J = 23,33)
      READ(12,500)(NM3(J),J = 34,44)
      READ(12,515)(NUMTYP(J,1),J = 1,6)
      READ(12,515)(NUMTYP(J,2),J = 1,6)
      DO 190 ISIDE = 1,2
      DO 190 J = 1,6
  190 NCEMWP(ISIDE) = NCEMWP(ISIDE)+NUMTYP(J,ISIDE)
      DO 195 ISIDE = 1,2
```

Figure III.1.12 (Cont.)

```
114             DO 195 CAT = 1,6
115             N = NUMTYP(CAT,ISIDE)
116             READ(12,515) (PLSTAT(J,CAT,ISIDE),J = 1,N)
117             DO 195 J = 1,N
118             IF (PLSTAT(J,CAT,ISIDE).EQ.9) MYTYPE(CAT,ISIDE) = J
119             IF (PLSTAT(J,CAT,ISIDE).EQ.1) MYTYPE(CAT,ISIDE) = J
120         195 CONTINUE
121       C
122       C***READ IN FROM (10) BLUE AND RED WEAPON DATA
123             DO 35 TC = 1,TKMAX
124          10 READ(10,500,END=99)LININF
125             IF((LININF(1).EQ.' BLUE ').AND.(LININF(7).EQ.'MARY  ')
126            *    .AND.(LININF(21).EQ.'TEK CY')) GO TO 20
127             GO TO 10
128          20 CONTINUE
129       C
130       C***READ SURVIVING ASSETS AND RTD FOR PERSONNEL
131       C***TANKS,APCS,HELOCOPTERS,ANTI-TANK MORTARS & ARTILLERY
132       C***FOR BOTH SIDES
133       C***SCANNING FIRST PART OF LOGREP
134       C
135             DO 25 ISIDE = 1,2
136             DO 25 CAT = 1,6
137          40 READ(10,510)LINID
138             IF(LINID.NE.NM1(CAT)) GO TO 40
139             IF((CAT.EQ.1).AND.(ISIDE.EQ.1))
140            *     READ(10,510)LINID,TP,DATA12
141             IF((CAT.EQ.1).AND.(ISIDE.EQ.2))
142            *     READ(0,550)LINID,DATA12
143             IF((CAT.EQ.1).AND.(ISIDE.EQ.2))
144            *     TP = 1
145             IF(CAT.NE.1)READ(10,510)LINID,TP,DATA12
146             SURVAS(TP,CAT,ISIDE,TC) = DATA12(1)
147             IF(TP.NE.MYTYPE(CAT,ISIDE))GO TO 40
148          25 CONTINUE
149          35 CONTINUE
150             WRITE(6,580)
151       C
152       C***READ DEPS., REPS., WPNS TO POOL, WPNS FROM POOL FOR PERSONNEL
153       C***TANKS, APCS, AT/MS, HELOS AND ARTY
154       C***FOR BOTH SIDES
155       C***FROM 2ND PART OF LOGREP
156       C
157             DO 15 ISIDE = 1,2
158             DO 15 CAT = 1,6
159          12 KOUNT = 0
160             READ(10,500,END=99)LININF
161             IF(LININF(5).NE.NM2(CAT)) GO TO 12
162             IF((ISIDE.EQ.2).AND.(LININF(5).EQ.'PERSNL')) TP = 1
163             IF((ISIDE.EQ.2).AND.(LININF(5).EQ.'PERSNL')) GO TO 89
164             IF((ISIDE.EQ.1).AND.(LININF(5).EQ.'PERSNL')
165            *.AND.(LININF(10).NE.'RY   1')) GO TO 12
166          14 READ(0,590)TP
167          89 READ(10,500,END = 99)LININF
168             IF(LININF(1).NE.'    0 ')KOUNT = KOUNT + 1
169             IF(KOUNT.GE.13) GO TO 12
170             IF(LININF(1).NE.'    0 ')GO TO 89
```

Figure III.1.12 (Cont.)

```
171             READ(10,560)TC,DATA15
172          105 WRITE(6,530)TP,CAT,ISIDE
173             WRITE(6,560)TC,DATA15
174             DEPLOY(TP,CAT,ISIDE,TC) = DATA15(1)-DEPOLD(TP,CAT)
175             DEPOLD(TP,CAT) = DATA15(1)
176             THREPL(TP,CAT,ISIDE,TC) = DATA15(4)
177             REPLFP(TP,CAT,ISIDE,TC) = DATA15(9)
178             IF (DATA15(9).EQ.0) GO TO 92
179             LOSTPK(TP,CAT,ISIDE,TC) = DATA15(9)/(DATA15(10)+DATA15(9))
180           92 IF(TC.EQ.45) GO TO 94
181             READ(10,500,END=99)LININF
182             IF(LININF(1).NE.NM3(TC))GO TO 92
183             READ(10,560)TC,DATA15
184             IF(TC.LE.TRMAX)GO TO 105
185           94 IF(TP.EQ.MYTYPE(CAT,ISIDE)) GO TO 95
186             GO TO 12
187           95 CONTINUE
188           15 CONTINUE
189             WRITE(6,585)
190      C
191      C***READ IN FROM (12) MAPPING AND WEAPON CONSTANTS AND WRITE ON(7)
192      C
193      C
194      C***MAX WEAPONS,SAMPLES & ESDS PLAYED IN TR
195             READ (12,530)NOS
196      C***PREPARE OUTPUT TAPES
197      C
198      C***NO OF TYPES IN CATEGORY
199             WRITE(7,530)NOS
200             WRITE(7,530)(NUMTYP(J,1),J=1,6)
201             WRITE(7,530)(NUMTYP(J,2),J=1,6)
202      C
203      C***MAP BLUE CEM WEAPONS ON AMMORATES
204             M = NOS(1)/2
205             BWPLYD = 0
206             DO 210 J = 1,2
207             READ(12,530)(BLCMAM(K),K=1,M)
208             DO 220 K = 1,M
209           220 IF(BLCMAM(K).NE.99)BWPLYD=BWPLYD+1
210           210 WRITE(7,530)(BLCMAM(K),K=1,M)
211      C
212      C***SINCE RED WEAPONS ARE ROLLED INTO SIX
213      C***CATEGORIES MAPPING IS ONE ON ONE
214      C***THE MAP RED CODE THAT FOLLOWS IS IN
215      C***PLACE FOR POSSIBLE FUTURE USE IN CALCULATING
216      C***RED PARAMETERS
217      C***MAP RED CEM WEAPONS ON AMMORATES
218             M = NOS(2)/2
219             RWPLYD = 0
220             DO 230 J = 1,2
221             READ(12,530)(RDCMAM(K),K=1,M)
222             DO 240 K = 1,M
223           240 IF(RDCMAM(K).NE.99)RWPLYD=RWPLYD+1
224           230 WRITE(7,530)(RDCMAM(K),K=1,M)
225      C
226      C***MAP RED AMMORATES WEAPONS ON CEM
227             M = 6
```

Figure III.1.12 (Cont.)

```
228             READ(12,530)(RDAMCM(K),K=1,M)
229           250 WRITE(7,530)(RDAMCM(K),K=1,M)
230         C
231         C***READ IN (11) STYLIZED QUANTITIES
232               N = BWPLYD
233               M = NOS(3)
234               DO 260 J=1,N
235               READ(11,530)(STYLZD(K),K=1,M)
236           260 WRITE(7,530)(STYLZD(K),K=1,M)
237         C
238         C***NO OF DAYS
239               NODAYS = TRMAX*4
240               WRITE(7,530)NODAYS
241         C
242         C***DAILY = CYCLE/4.
243         C***SEPARATE INTO OS & GS MAINTENANCE
244         C***WEAPONS FROM POOL ARE = TO REPLACEMENTS + GS MAINTENANCE
245         C
246               ISIDE = 1
247               DO 897 TC = 1,TRMAX
248               DO 897 CAT = 1,6
249               L = NUMTYP(CAT,ISIDE)
250               DO 897 TP = 1,L
251               DEPLOY(TP,CAT,ISIDE,TC) = DEPLOY(TP,CAT,ISIDE,TC)
252               THREPL(TP,CAT,ISIDE,TC) = THREPL(TP,CAT,ISIDE,TC)/4.
253               RTD(TP,CAT,ISIDE,TC) = REPLFP(TP,CAT,ISIDE,TC)*.4/5/4.
254               REPLFP(TP,CAT,ISIDE,TC) = THREPL(TP,CAT,ISIDE,TC)
255              *  +REPLFP(TP,CAT,ISIDE,TC)*.36/4.
256               SURVAS(TP,CAT,ISIDE,TC) = SURVAS(TP,CAT,ISIDE,TC)
257           897 CONTINUE
258         C
259         C***WRITE CEM ARRAYS FOR APP ON LOGICAL UNIT 7
260         C***OS AND GS MAINTENANCE PLACED IN APP ARE
261         C***ASSUMED TO EACH BE EQUAL  ONE HALF OF THE
262         C***MAINTENANCE FACILITY THAT IS SIMULATED IN CEM
263         C***SOME VARIABLES HAVE BEEN REUSED TO CONSERVE STORAGE
264         C***FINAL ORDER OF OUTPUT IS
265         C***  1. DEPLOYMENT
266         C***  2. REPLACEMENTS TO POOL
267         C***  3. RETURN TO DUTY FROM OS MAINTENANCE
268         C***  4. RETURN TO POOL FROM GS MAINTENANCE
269         C***  5. REPLACEMENT + GS MAINTENANCE FROM POOL
270         C***  6. SURVIVING ASSETS
271         C
272               DC = 0
273               DO 999 T   = 1,TRMAX
274               DO 996 KA  TE = 1,4
275               DC = DC+1
276         C     WRITE(7,560)DC
277               DO 996 CAT = 1,6
278               L = NUMTYP(CAT,ISIDE)
279               DO 997 TP = 1,L
280               IF(RWRITE.NE.1)DEPLOY(TP,CAT,ISIDE,TC)=.0
281               WRITE(7,530)DEPLOY(TP,CAT,ISIDE,TC)
282                    ,THREPL(TP,CAT,ISIDE,TC)
283                    ,RTD(TP,CAT,ISIDE,TC)
284                    ,REPLFP(TP,CAT,ISIDE,TC)
```

Figure III.1.12 (Cont.)

```
285             *     ,RTD(TP,CAT,ISIDE,TC)
286             *     ,SURVAS(TP,CAT,ISIDE,TC)
287           997 CONTINUE
288               WRITE(7,570)
289           998 CONTINUE
290               WRITE(7,570)
291               WRITE(7,570)
292               WRITE(7,570)
293         C
294         C***CALL CEMLOS FOR DAILY ON-LINE, K-KILL
295         C***AND M-KILL DATA, AND FOR CAS RATIOS
296         C
297               CALL CEMLOS
298           996 CONTINUE
299           999 CONTINUE
300            99 STOP
301               END
```

Figure III.1.12 (Cont.)

```
UNCLASSIFIED*ELFRANK(1),CEMLOS/16JUL80
      1            SUBROUTINE CEMLOS
      2      C***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  *****
      3      C  AUTHOR   ANDREW N.CARRAS
      4      C PURPOSE.
      5      C          THIS SUBROUTINE READS ON-LINE AND HIT DATA FROM
      6      C          A SELECTED CEM PARTITION FILE ( AMMOR1 OR
      7      C          AMMOR2) AND CAS LOSSES FROM THE CEM LOSSREP
      8      C          FOR USE IN THE APP
      9      C           A)OUTPUT FROM CEM IS IN LOGICAL UNIT 14, AND 3/AMMO1.
     10      C             FOR ON-LINE AND ATTRITION VALUES, AND LOGICAL UNIT 15
     11      C             AND 3/LOSSREP FOR CAS
     12      C           B)INPUT TO THE AMMORATES MODEL IS WRITTEN ON LOGICAL UNIT 8.
     13      C VARIABLE DEFINITIONS.
     14      C          CASAPC  CAS DAILY APC PERMANENT LOSSES
     15      C          CASCPE  CAS DAILY CREW PERSONNEL TOTAL LOSSES
     16      C          CASNPE  CAS DAILY NONCREW PERSONNEL TOTAL LOSSES
     17      C          CASTAK  CAS DAILY TANK PERMANENT LOSSES
     18      C          CSTAPC CAS DAILY APC TEMPORARY LOSSES
     19      C          CSTTAK CAS DAILY TANK TEMPORARY LOSSES
     20      C          CAT     WEAPON CATEGORY
     21      C          1 = PERSONNEL
     22      C          2 = TANKS
     23      C          3 = LIGHT ARMOR
     24      C          4 = HELICOPTERS
     25      C          5 = A/TMORTARS
     26      C          6 = ARTY
     27      C          DAY     DAY FROM 3/LOSSREP REPORT
     28      C          DC      DAY CYCLE COUNTER
     29      C          ISIDE   1 = BLUE, 2 = RED
     30      C          KEM     1 = ENG, 2 = K-KILL, 3 = M-KILL
     31      C          LININF  ALPHANUMERIC READ WORD, 6 CHARACTERS
     32      C          LOSTPR  RATIO TEMPORARY/PERMANENT KILLS (BLUE AND RED)
     33      C                  (TYPE,CATEGORY,SIDE,THEATER CYCLE)
     34      C          LRCSTK  LOSS RATIO (PERMANENT) TO CAS/TOTAL OF RED TANKS
     35      C          LRCSIA  LOSS RATIO (PERMANENT) TO CAS/TOTAL OF RED ICV/APCS
     36      C          LRCSAR  LOSS RATIO (PERMANENT) TO CAS/TOTAL OF RED ARMOR
     37      C          LRCSPE  LOSS RATIO (PERMANENT) TO CAS/TOTAL OF RED PERSONNEL
     38      C          NCEMWP  ARRAY,TOTAL TYPES CEMM/L  WPNS, EACH SIDE
     39      C          NGAG    ENGAGEMENT SAMPLE
     40      C          NODAYS  NUMBER OF DAYS SIMULATED
     41      C          NUMTYP  ARRAY, NO OF WPNS TYPES IN EACH CATEGORY (CEMM/L)
     42      C          PLSTAT  ARRAY, STATUS OF WEAPON
     43      C                  1 = PLAYED, 0 = NOT PLAYED
     44      C                  - = RED ICV, 1 = RED APC (IN CATEGORY 3)
     45      C          RATIOB   RATIO OF BLUE PERSONNEL ENGAGED FOR EACH SAMPLE
     46      C                  (NGAG)
     47      C          RATIOR  RATIO OF RED PERSONNEL ENGAGED FOR EACH SAMPLE
     48      C                  (NGAG)
     49      C          SUMAPB  APC BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
     50      C          SUMHER  HELO RED DAILY ENGAGED,K-KILL,M-KILL DATA
     51      C                  (KEM,TYPE,NGAG)
     52      C          SUMPEB  PERSONNEL BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
     53      C                  (KEM,TYPE,NGAG)
     54      C          SUMPER  PERSONNEL RED DAILY ENGAGED,K-KILL,M-KILL DATA
     55      C                  (KEM,TYPE,NGAG)
     56      C          SUMTKB  TANKS BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
```

Figure III.1.13

```
C                    (REM,TYPE,NGAG)
C          SUMAPR    APC RED DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMARB    ARTILLERY BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMARR    ARTILLERY RED DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMATB    AT/M BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMATR    AT/M RED DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMHEB    HELO BLUE DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C                    (REM,TYPE,NGAG)
C          SUMTKR    TANKS RED DAILY ENGAGED,K-KILL,M-KILL DATA
C                    (REM,TYPE,NGAG)
C          SUMREP    RED PERSONNEL(ALL TYPES) LOST
C                    (NGAG)
C          SUMRTN    RED TANKS(ALL TYPES) LOST
C                    (NGAG)
C          SUMRIC    RED ICVS (ALL TYPES) LOST
C                    (NGAG)
C          SUMRAP    RED APCS (ALL TYPES) LOST
C                    (NGAG)
C          SUMRIA    RED ICV/APC (ALL TYPES) LOST
C                    (NGAG)
C          SUMRAR    RED ARMOR (ALL TYPES) LOST
C                    (NGAG)
C          TC        THEATER CYCLE COUNTER
C          TP        TYPE COUNTER
C          TOTAPC    TOTAL DAILY RED APC PERMANENT LOSSES
C          TOTCPE    TOTAL DAILY RED CREW LOSSES
C          TOTNPE    TOTAL DAILY RED NONCREW LOSSES
C          TOTTAK    TOTAL DAILY RED TANK PERMANENT LOSSES
C          TTTTAK TOTAL DAILY RED TANK TEMPORARY LOSSES
C          TTTAPC TOTAL DAILY RED APC TEMPORARY LOSSES
C***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  *****
C
      COMMON/LSRP/LOSTPK(12,6,2,45),TRMAX,DC,TC,SURVAS,PLSTAT(12,6,2)
      DIMENSION LININF(22)
     *   ,SUMAPB(3,12,8),SUMAPR(3,12,8),SUMARB(3,8,8),SUMARR(3,8,8)
     *   ,SUMATB(3,52,8),SUMATR(3,52,8),SUMHEB(3,5,8),SUMHER(3,5,8)
     *   ,SUMPEB(3,1,8),SUMPER(3,1,8),SUMTKB(3,12,8),SUMTKR(3,12,8)
     *   ,SUMREP(8),SUMRTN(8),SUMRIC(8),SUMRAP(8),SURVAS(12,6,2,45)
     *   ,RATIOB(8),RATIOR(8),SUMRIA(8),SUMRAR(8)
      REAL LININF,SUMAPB,SUMAPR,SUMARB,SUMARR,SUMATB,SUMATR
     *    ,LOSTPK,RATIOB,RATIOR
     *   ,SUMHEB,SUMHER,SUMPEB,SUMPER,SUMTKB,SUMTKR
     *   ,SUMREP,SUMRTN,SUMRIC,SUMRAP,SUMRIA,SUMRAR
     *   ,CASTAK,TOTTAK,CASAPC,TOTAPC,CASCPE,TOTCPE,CASNPE,TOTNPE
     *   ,LRCSTA,LRCSIA,LRCSAR,LRCSPE,ALPHA
     *   ,CSTAPC,CSTTAK,TTTTAK,TTTAPC
      INTEGER
     *    DC,DAY,TC,TP,TRMAX,NODAYS,PLSTAT
C
C***FORMAT STATEMENTS
  590 FORMAT(1X,23HDROP THROUGH ON LOSSREP)
```

Figure III.1.13 (Cont.)

```
  580 FORMAT(1X,23H*** RED LOSS RATIOS ARE ,4F6.5)
  570 FORMAT(6X,7HX,F6.2,6X,F6.2)
  560 FORMAT(1X,44H***MISMATCH ON DAY READOUT FROM 3/LOSSREP***)
  550 FORMAT(6X,A6,14A,2I3)
  540 FORMAT(6A,21A6)
  530 FORMAT(1)
  510 FORMAT(12F9.1)
  502 FORMAT(6X,19HRATIO LOSSES FOR TC,I3)
  500 FORMAT(22A6)
C
C***READS CAS LOSS/TOTAL RATIOS FOR TANKS
C***APCS ICVS AND PERSONNEL FOR DAY FROM 15
C
  100 READ(15,500,END=160)LININF
      IF (LININF(2).NE.'LOSSES') GO TO 100
      READ(5,550)ALPHA,DAY
      IF(DAY.NE.DC) GO TO 100
      WRITE(6,500)LININF
      WRITE(6,550)ALPHA,DAY,DC
      IF(DAY.NE.DC) WRITE(6,560)
  105 READ(15,500,END=160) LININF
      IF((LININF(3).NE.'  TOTA').AND.(LININF(4).NE.'      '))
     .   GO TO 105
C     WRITE(6,540) LININF
  110 READ(15,500,END=160) LININF
      IF(LININF(2).NE.'  RED ') GO TO 110
C     WRITE(6,540) LININF
  120 READ(15,500,END=160) LININF
      IF(LININF(2).NE.'   TAN')
     .   GO TO 120
C     WRITE(6,540) LININF
      READ(5,570)CASTAK,TOTTAK
      READ (15,570)CSITAK,TTTTAK
      WRITE(6,570)CASTAK,TOTTAK
      WRITE (6,570)CSITAK,TTTTAK
  130 READ(15,500,END=160) LININF
      IF(LININF(2).NE.'   APC')
     .   GO TO 130
C     WRITE(6,540) LININF
      READ(5,570) CASAPC,TOTAPC
      READ(15,570)CSTAPC,TTTAPC
      WRITE(6,570) CASAPC,TOTAPC
      WRITE(6,570)CSTAPC,TTTAPC
  140 READ(15,500,END=160) LININF
      IF(LININF(3).NE.'   CRE') GO TO 140
C     WRITE(6,540) LININF
      READ(5,570)CASCPE,TOTCPE
      WRITE(6,570)CASCPE,TOTCPE
  150 READ(15,500,END=160) LININF
      IF(LININF(3).NE.'   NON') GO TO 150
C     WRITE(6,540) LININF
      READ(5,570) CASNPE,TOTNPE
      WRITE(6,570) CASNPE,TOTNPE
      GO TO 170
  160 WRITE(6,590)
C
C***WRITE RATIO CAS/TOTAL PERMANENT LOSSES
```

Figure III.1.13 (Cont.)

```
      C
  170 LRCSTK = (CSTTAK+CASTAK)/(TOTTAK+TTTTAK)
      LRCSIA = (CSTAPC+CASAPC)/(TOTAPC+TTTAPC)
      LRCSAR = (CSTTAK+CSTAPC+CASTAK+CASAPC)
     *   /(TOTTAK+TOTAPC+TTTTAK+TTTAPC)
      LRCSPE = (CASCPE+CASNPE)/(TOTCPE+TOTNPE)
      WRITE(6,580) LRCSTK,LRCSIA,LRCSAR,LRCSPE
      C
      C***READ IN FROM (10) BLUE AND RED WEAPON DATA
      NODAYS = TRMAX*4
   10 READ(14,500,END=99)LININF
      IF((LININF(10).EQ.' ENGAG').AND.(LININF(11).EQ.'ED AND')
     *   ) GO TO 20
      GO TO 10
   20 CONTINUE
      C
      C***READ NOS ENGAGED AND HIT FOR DAY DC FOR PERSONNEL
      C***TANKS,APCS,HELICOPTERS,ANTI-TANK MORTARS & ARTILLERY
      C***FOR BLUE AND RED
      C
            DO 25 NGAG = 1,8
            DO 25 KEH = 1,2
            READ(14,510)SUMPEB(KEH,1,NGAG)
            READ(14,510)(SUMTKB(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMAPB(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMHEB(KEH,TP,NGAG),TP = 1,5)
            READ(14,510)(SUMATB(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMAMB(KEH,TP,NGAG),TP=1,8)
            READ(14,510)SUMPER(KEH,1,NGAG)
            READ(14,510)(SUMTKR(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMAPR(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMHER(KEH,TP,NGAG),TP = 1,5)
            READ(14,510)(SUMATR(KEH,TP,NGAG),TP=1,12)
            READ(14,510)(SUMAMR(KEH,TP,NGAG),TP=1,8)
      25 CONTINUE
      C
      C***THIS SECTION
      C***SEPARATE HITS INTO K AND M-KILLS
      C***FOR EACH BLUE AND RED WEAPON SYSTEM
      C***AND COMPUTES RED & BLUE ON LINE ARTY TUBES
      C
      C***ROLL UP TOTAL BLUE AND RED PERSONNEL FOR DAY
      C
            SIGMAB = 0.
            SIGMAR = 0.
            DO 29 NGAG = 1,8
            DO 29 TP = 1, 12
            RATIOB(NGAG) = 0.
            RATIOR(NGAG) = 0.
            SIGMAB = SUMTKB(1,TP,NGAG)+SIGMAB
      29 SIGMAR = SUMTKR(1,TP,NGAG)+SIGMAR
      C
      C***COMPUTE RATIO OF ENGAGED TANKS IN EACH SAMPLE
      C
            DO 30 NGAG = 1,8
            DO 31 TP = 1 , 12
            RATIOB(NGAG) = SUMTKB(1,TP,NGAG)/SIGMAB + RATIOB(NGAG)
```

Figure III.1.13 (Cont.)

```
            RATIOR(NGAG) = SUMTRR(1,TP,NGAG)/SIGMAR * RATIOR(NGAG)
         31 CONTINUE
      C
      C
      C***SEPARATE K AND M KILLS FOR PERSONNEL
            SUMPEB(3,1,NGAG) = SUMPEB(2,1,NGAG)*LOSTPK(1,1,1,TC)
            SUMPEB(2,1,NGAG) = SUMPEB(2,1,NGAG) - SUMPEB(3,1,NGAG)
            SUMPER(3,1,NGAG) = SUMPER(2,1,NGAG)*LOSTPK(1,1,2,TC)
            SUMPER(2,1,NGAG) = SUMPER(2,1,NGAG) - SUMPER(3,1,NGAG)
      C
      C***SEPARATE K AND M KILLS FOR TANKS, LIGHT ARMOR, A/T MORTARS
      C
            DO 40 TP = 1,12
            SUMTKB(3,TP,NGAG)  =SUMTKB(2,TP,NGAG)*LOSTPK(TP,2,1,TC)
            SUMTKB(2,TP,NGAG) = SUMTKB(2,TP,NGAG) - SUMTKB(3,TP,NGAG)
            SUMTKR(3,TP,NGAG)  =SUMTKR(2,TP,NGAG)*LOSTPK(TP,2,2,TC)
            SUMTKR(2,TP,NGAG) = SUMTKR(2,TP,NGAG) - SUMTKR(3,TP,NGAG)
            SUMAPB(3,TP,NGAG) = SUMAPB(2,TP,NGAG)*LOSTPK(TP,3,1,TC)
            SUMAPB(2,TP,NGAG) = SUMAPB(2,TP,NGAG) - SUMAPB(3,TP,NGAG)
            SUMAPR(3,TP,NGAG) = SUMAPR(2,TP,NGAG)*LOSTPK(TP,3,2,TC)
            SUMAPR(2,TP,NGAG) = SUMAPR(2,TP,NGAG) - SUMAPR(3,TP,NGAG)
            SUMATB(3,TP,NGAG) = SUMATB(2,TP,NGAG)*LOSTPK(TP,5,1,TC)
            SUMATB(2,TP,NGAG) = SUMATB(2,TP,NGAG) - SUMATB(3,TP,NGAG)
            SUMATR(3,TP,NGAG) = SUMATR(2,TP,NGAG)*LOSTPK(TP,5,2,TC)
         40 SUMATR(2,TP,NGAG) = SUMATR(2,TP,NGAG) - SUMATR(3,TP,NGAG)
      C
      C***SEPARATE K AND M KILLS FOR HELICOPTERS
      C
            DO 50 TP = 1,5
            SUMHEB(3,TP,NGAG) = SUMHEB(2,TP,NGAG)*LOSTPK(TP,4,1,TC)
            SUMHEB(2,TP,NGAG) = SUMHEB(2,TP,NGAG)-SUMHEB(3,TP,NGAG)
            SUMHER(3,TP,NGAG) = SUMHER(2,TP,NGAG)*LOSTPK(TP,4,2,TC)
         50 SUMHER(2,TP,NGAG) = SUMHER(2,TP,NGAG)-SUMHER(3,TP,NGAG)
      C
      C***COMPUTE ON LINE ARTY (RED & BLUE) FOR TWO TWELVE HOUR PERIODS
      C***USING LOGREP TOTAL OUTPUT AND SEPERATING INTO POSTURES BY PERSONNEL
      C***RATIO RELATIONSHIP.
      C
            DO 70 TP = 1,8
            SUMARB(1,TP,NGAG) =2*SURVAS(TP,6,1,TC)*RATIOB(NGAG)
            SUMARB(2,TP,NGAG) = 0.02*SURVAS(TP,6,1,TC)*RATIOB(NGAG)
            SUMARB(3,TP,NGAG) = 0.02*SURVAS(TP,6,1,TC)*RATIOB(NGAG)
            SUMARR(1,TP,NGAG) = 2*SURVAS(TP,6,2,TC)*RATIOR(NGAG)
            SUMARR(2,TP,NGAG) = 0.02*SURVAS(TP,6,2,TC)*RATIOR(NGAG)
         70 SUMARR(3,TP,NGAG) = 0.02*SURVAS(TP,6,2,TC)*RATIOR(NGAG)
         80 CONTINUE
      C
      C***SUMMATION OF RED LOSSES INTO 6 CATEGORIES
      C***THESE CATEGORIES ARE
      C***RED PERSONNEL - SUMREP
      C***RED TANKS     - SUMRTN
      C***RED ICVS      - SUMRIC
      C***RED APCS      - SUMRAP
      C***RED IC /APC   - SUMRIA
      C***RED AR...     - SUMRAR
      C***A ... THE PLSTAT ARRAY DENOTES AN ICV
      C
```

Figure III.1.13 (Cont.)

```
285       C***ZERO TOTAL RED LOSS ARRAYS
286             DO 600 NGAG = 1,8
287             SUMREP(NGAG) = 0.
288             SUMRTN(NGAG) = 0.
289             SUMRIC(NGAG) = 0.
290             SUMRAP(NGAG) = 0.
291             SUMRIA(NGAG) = 0.
292             SUMRAR(NGAG) = 0.
293           600 CONTINUE
294       C
295       C***COMPUTE TOTAL RED LOSS ARRAYS FOR TOTAL HITS
296       C
297       C
298             DO 610 NGAG = 1,8
299             SUMREP(NGAG) = SUMPER(2,1,NGAG)+ SUMPER(3,1,NGAG)
300             DO 610 TP = 1,12
301             SUMRTN(NGAG) = SUMTKR(2,TP,NGAG)+SUMRTN(NGAG)+SUMTKR(3,TP,NGAG)
302             IF (PLSTAT(TP,3,2).EQ.9)
303            *   SUMRIC(NGAG) = SUMAPR(2,TP,NGAG)+SUMRIC(NGAG)+SUMAPR(3,TP,NGAG)
304             IF (PLSTAT(TP,3,2).EQ.1)
305            *   SUMRAP(NGAG) = SUMAPR(2,TP,NGAG)+SUMRAP(NGAG)+SUMAPR(3,TP,NGAG)
306             SUMRIA(NGAG) = SUMRIC(NGAG) + SUMRAP(NGAG)
307             SUMRAR(NGAG) = SUMRIA(NGAG) + SUMRTN(NGAG)
308           610 CONTINUE
309             WRITE(6,502)TC
310             DO 38 ISIDE = 1,2
311             WRITE(6,510)LOSTPK(1,1,ISIDE,TC)
312             WRITE(6,510)(LOSTPK(TP,2,ISIDE,TC),TP=1,12)
313             WRITE(6,510)(LOSTPK(TP,3,ISIDE,TC),TP=1,12)
314             WRITE(6,510)(LOSTPK(TP,4,ISIDE,TC),TP=1,5)
315             WRITE(6,510)(LOSTPK(TP,5,ISIDE,TC),TP=1,12)
316             WRITE(6,510)(LOSTPK(TP,6,ISIDE,TC),TP=1,8)
317            36 CONTINUE
318            36 CONTINUE
319       C
320       C***WRITE ENGAGED, K-KILLS & R-KILLS
321       C***FOR BLUE WEAPONS (ALL CATEGORIES &
322       C***TYPES) ONTO APP INPUT FILE (LOGICAL
323       C***UNIT 7)
324       C
325             DO 80 NGAG = 1,6
326             WRITE(7,510)(SUMPEB(KEH,1,NGAG),KEH=1,3)
327             WRITE(7,510)((SUMTKB(KEH,TP,NGAG),KEH = 1,3),TP = 1,12)
328             WRITE(7,510)((SUMAPB(KEH,TP,NGAG),KEH = 1,3),TP = 1,12)
329             WRITE(7,510)((SUMREB(KEH,TP,NGAG),KEH=1,3),TP = 1,5)
330             WRITE(7,510)((SUMATB(KEH,TP,NGAG),KEH = 1,3),TP = 1,12)
331             WRITE(7,510)((SUMARB(KEH,TP,NGAG),KEH = 1,3),TP = 1,8)
332       C
333       C***SEPARATE CAS FROM TOTAL LOSSES FOR 6 RED CATEGORIES
334       C
335             SUMREP(NGAG) = (1-LRCSPE)*SUMREP(NGAG)
336             SUMRTN(NGAG) = (1-LRCSTK)*SUMRTN(NGAG)
337             SUMRIC(NGAG) = (1-LRCSIA)*SUMRIC(NGAG)
338             SUMRAP(NGAG) = (1-LRCSIA)*SUMRAP(NGAG)
339             SUMRIA(NGAG) = (1-LRCSIA)*SUMRIA(NGAG)
340             SUMRAR(NGAG) = (1-LRCSAR)*SUMRAR(NGAG)
341       C
342       C***WRITE LOSSES FOR 6 RED CATEGORIES ONTO UNIT 7
343       C
344             WRITE(7,510)SUMREP(NGAG),SUMRTN(NGAG),SUMRIC(NGAG)
345            *   ,SUMRAP(NGAG),SUMRIA(NGAG),SUMRAR(NGAG)
346           80 CONTINUE
347           35 CONTINUE
348           99 RETURN
349              END
```

Figure III.1.13 (Cont.)

THIS PAGE IS INTENTIONALLY LEFT BLANK

CHAPTER 2

EQUIVALENT STYLIZED DAY PROGRAM

2.1 DESCRIPTION OF PROCESSING: The Equivalent Stylized Day (ESD) program is implemented in the SIMSCRIPT II.5 programming language. The syntax of the language with the lengthy variable naming capability has produced an easy reading program though the program does not employ the use of the simulation (timing routines) features. The ESD program is an accounting type program that reads data, computes the ESD values and writes out the results. This is achieved through the Preamble, which declares the data structure; MAIN, which is the driver, and which makes calls to five subroutines called ESD.MAP, RESET.TOTAL1, DAILY.INPUTS, RATIO.COMP and ESD.COMP1.

2.1.1 PURPOSE/FUNCTIONS: The ESD program was developed as a component to the APP to compute the equivalent stylized day values that were previously computed by the Theater Rates Model (TRM), a component of the AMMO RATES methodology. Reference item Z in Appendix A provides historical information on the ESD concepts and computations, but is not directly applicable to the current system. The program is designed to read four input data files and produce one primary output file, the AMMOUT file. Of the four input files, AMMOIN Is produced by the previously executed Buffer program, and the MAPESD, RPERCK and RSTYLO are manually created by the user/analyst. All input data files are sequential and read in their entirety. The runstream for program execution breakpoints a file cataloged as APPPRINT in addition to the runstream's Temporary Program File (TPF$).

2.1.2 PROGRAM INPUT/OUTPUT STRUCTURE: The program's I/O structure is depicted in Figure III.2.1. The numbers inside the flow chart symbols for the input data files is the sequence that the file is called initially by the program. The number outside the symbol, at the upper left is the logical unit assigned by the runstream and expected by the program during execution for I/O. Through out the documentation, the double asterisk "**" is used in lieu of stating a specific user identification number when discussing program files.

2.1.2.A INPUT DATA and DATA BASE: The three input data files are not part of a formal database organization. These files are maintained by the current user/analyst, and in the case of the manually produced files, updated in the course of study program progression. It is incumbent on the user to properly catalog and maintain the data files. A version name may be appended to the file element name to distinquish between like - named files and provide an audit trail by linking the version name to the study in progress. The formats of the data is discussed in Volume III, Chapter 2 of this documentation set, and are not duplicated here. The following is a summary of the input data files.

- o AMMOIN - The **AMMOIN input data file was the product of the

Buffer program. It is assigned as a permanently cataloged program (PRINT) file and the data within it provided to the program via the @ADD - EXECUTIVE-8 command following the program execution (@XQT) statement, thus using logical unit 5 (by default) to introduce data. A sample of this data file is depicted in Figure III.2.2. Though produced in a formatted output, the data is read utilizing free formatted read statements. The data is read sequentially and the full content of the file is read.

- MAPESD - The data file is manually developed by the user/analyst. It is normally a version of a predecessor file updated to reflect the results of the current study's high-resolution (COSAGE) and theater (CEM) model results. It's length (43 records) and organization permit manual editing and revision. A sample of the data file is depicted in Figure III.2.3. The data is read as free-formatted for input, therefore the organization is for ease of editing and visual verification. The format, by the depicted records, is as follows:

Position	Description	Format
	- Record 1 -	
First	AVA - The ESD that relates to the armor versus armor value.	Integer
	- Records 2-41 - (One record for each ESD modeled)	
First	ESD sequence number,used for input only, to relate to the input sequence.	Integer
Second	BLUE.WPN.PTR, Blue weapon pointer to one of the modeled blue weapons related to the ESD.	Integer
Third	RED.QPN.PTR, Red weapon pointer to one of the modeled red weapons related to the ESD.	Integer
Fourth	R.QTY.INDEX, the red quantity index or value of the red weapon systems who's quantity relates to this ESD.	Integer
Fifth	B.RATIO.INDEX, the blue ratio index (0 or 1) to switch computational methods for ESD.	Integer

Each position (total positions =4 x N.SAMPLE)	COMB.SAMPLE, the coefficient used in combining samples combining samples,used as a percent in computations. In sample data, the values are used computationally as 0.0 or 1.0.	Integer (converted to real)

- o RPERCK - The data file is manually produced by the user/analyst. It is normally a version of a predecessor file updated to reflect the results of the current study's high-resolution model (COSAGE) results. It's length (120 records) and organization permit manual editing and revision. There are four groups of sequential records, each group containing 30 records. The groups denote red (direct fire) equipment (weapon) types 1 through 4; the 30 records denote 30 blue equipment (weapon) types. On each record there is an integer identifying the blue equipment type index followed by the percentage of hits that are K-kills (blue to red) in the stylized set (day). The value 99.9 is programmed and is a key to denote that the particular weapon (equipment) was not modeled or played. A sample of this data file is depicted in Figure III.2.4.

- o RSTYLO - The **RSTYLO data file is manually produced as a program file by the user/analyst. It is normally a version of the predecessor file updated to reflect the results of the current study's high resolution model (COSAGE) results. Its length (approximately 55 records) and organization permit manual editing and revision. There are four groups of sequential records; each group has the number of records that equates to the number of equipment types denoted in the preceeding RPERCK file with a value other than 99.9. On each record there is one (real) data entry for each combat sample (normally four). Each entry defines the ratio of: percent hits that are K-kills to the percent that are M-kills. The data value is the quantity of equipment (weapon) lost in the stylized red force to the blue weapon type. The four groups of data equate to red equipment types 1 through 4. Currently the methodology accounts for 6 red weapons or equipment types; the program provides for the input of red types 1 through 4 followed by the computation of data values for types 5 and 6 (indirect fire systems).

  Red equipment 5 is computed as the sum (by blue equipment type) of types 3 and 4. Red equipment 6 is computed as the sum, by blue equipment type, of losses for equipment type 2 and 5. An example of this input data is presented in Figure III.2.5.

2.1.2.B OUTPUT DATA and DATA FILES: The program produces the **AMMOUT file as its main function; the **APPPRINT file is produced as a breakpointed file to capture the progress of program execution in addition to the runstream output (TPF$) file. These files become a product managed by

the current user/analyst and are not a part of a formal database. It is incumbent on the user to properly catalog and maintain these files. This is usually accomplished in the execution runstream; the runstream as well as the data description and formats are discussed in Volume III, Chapter 2 of this documentation set and are not repeated herein. The following is a summary of the output data files.

- o AMMOUT - The **AMMOUT output data file is a cataloged program (print) file assigned in the "start" file element and is assigned to logical unit 9 via the @USE command in the runstream, and is also expected by the program. An example of this output file is presented in Figure III.2.6. The output is without printed labels; there are 38 records of data for each day of the modeled period of war. A 180 - day campaign or war would produce 6840 records of data. The file is assigned default space of 128 tracks on a fixed mass storage device. Note that a detailed description of AMMOUT is given in comment lines 13 to 39 of the report generator code Figure III.3.11.

- o APPPRINT - The **APPPRINT program file is depicted in Figure III.2.7. It is not normally printed out in its entirety due to its size, but is checked for program completion, then retained on a system mass storage device for reference as required. The file sequentially tracks the progress of program execution through print, write or list statements within the program.

2.1.2.C DATA ELEMENT DICTIONARY: The following variables are declared in the program PREAMBLE which provides the data definitions and background.

- o Global variables - The following variables are defined for use throughout the program.

Descriptor Word	Mode	Value	Definition
AVA	Integer	0-40	An armor versus armor variable applied in logic tests to determine if the ESD is an armor on armor value.
COMB.SAMPLE	Real	0-1	An input data array set to a coefficient for combining combat samples; 2 dimensional array, 4 by N.Sample
N.BLUE.[illegible]N	Integer	0-N	The quantity of blue weapon systems modeled in the high resolution model.

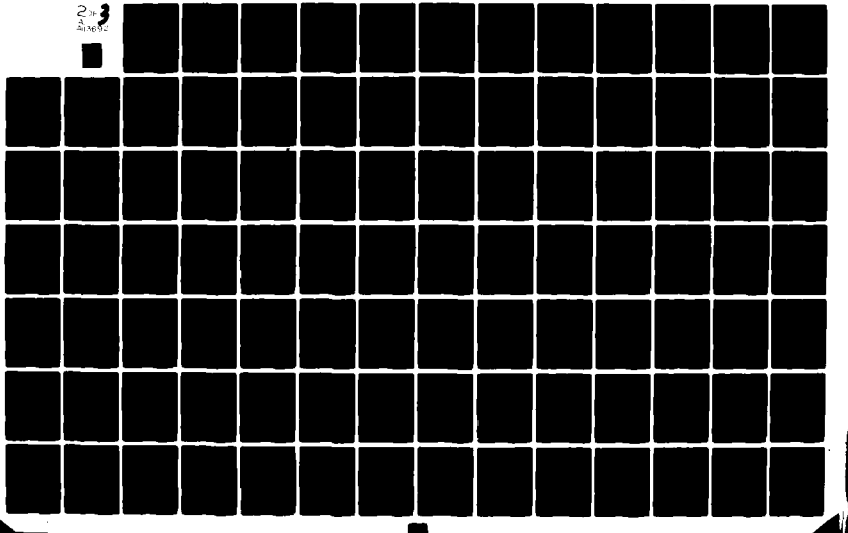
N.B.CEM.WPN	Integer	0-N	The quantity of blue weapon systems modeled in the theater (CEM) model.
N.ESD	Integer	0-N	The quantity of equivalent stylized days modeled, normally 40.
N.CEM.SAMPLE	Integer	0-N	The quantity of theater samples modeled, normally 8.
N.SAMPLE	Integer	0-N	The quantity of high resolution combat samples modeled, normally 4.
N.RED.WPN	Integer	0-N	The quantity of red weapon systems modeled in the high resolution combat model.
N.R.CEM.WPN	Integer	6	The quantity of red weapon systems modeled in the theater model; set to 6.

o Data variables - The relationships of the following variables may be established by reviewing the data structure in Figures III.2.8 and III.2.9.

Name	Mode	Definition
ARM.INDIC	Attribute-Integer	A binary flag to indicate that a blue weapon is armor type (1) or is not (0).
BLUE.WPN	Permanent Entity-integer	The index value of a modeled Blue force weapon system, value from 1 to N.BLUE.WPN.
BLUE.WPN.PTR	Attribute-Integer	A pointer to the blue weapon associated with a given ESD, Value is 0 ot N.BLUE.WPN.
BLUE.ID	Attribute - integer	The CEM weapon number associated with a BLUE.WPN, value as input.

B.ARMOR.ACT	Attribute - real	The total quantity of blue armored equipments modeled on simulated/on-line or actual in a sample.
B.ARMOR.STY	Attribute - real	The total quantity of blue armored equipments modeled on the stylized force array for a COSAGE sample.
BFRST	Attribute - real	The ratio of the quantity of actual or on-line blue armored equipments to the quantity of stylized armored equipments in a combat sample.
B.QTY.ON.HAND	Attribute - real of a compound entity	The quantity of a blue weapon by type in a sample that is engaged.
B.RATIO	Attribute - real of a compound entity	The ratio of actual or engaged weapons by type to stylized weapons by type in a sample.
B.RATIO.INDEX	Attribute-Integer	A binary flag to indicate that a given ESD computation will be by the normal (0) method or employ the B.RATIO value (1) in the computations, value 0 or 1.
B.STYLIZED.QTY	Attribute - real of a compound entity	The quantity of blue weapons in the stylized force by sample.
B.CEM.WPN	Permanent entity-integer	The index value of a modeled blue CEM weapon, value from 1 to N.B.CEM.WPN.
CEM.SAMPLE	Permanent entity-integer	The index value of a modeled CEM sample, value from 1 to N.CEM.SAMPLE.

AD-A113 692 CACI INC-FEDERAL ARLINGTON VA F/G 15/7
WARTIME REQUIREMENTS FOR AMMUNITION, MATERIEL, AND PERSONNEL (W--ETC(U)
FEB 82 R G RHOADES MDA903-80-D-0648
UNCLASSIFIED CAA-D-81-2 NL



DEPLOYMENT	Attribute - real	The quantity of a type of blue weapons deployed to the theater of operations in a day. (daily).
EQ	Attribute - real	The computed scalor quantity of a value per ESD and per sample.
ESD	Permanent entity-integer	The index value of a modeled equivalent stylized day, value of 1 to 40.
K.KILL	Attribute - real of a compound entity	The quantity of a blue weapon system accounted as k-kills for a sample, for the day.
M.KILL	Attribute - real of a compound entity	The quantity of a blue weapon system accounted as M-kills for a sample for the day.
PERC.K	Attribute - real of a compound entity	The quantity of blue kills of red systems by type.
POS.LOS.PART	Attribute - real of a compound entity	The quantity of read weapons of a type lost to (killed by) a blue weapon by type in a sample.
POS.TOT.LOS	Attribute - real of a compound entity	The total quantity (possible loss) of a red weapon system type, to blue systems in a sample.
RED.ID	Attribute - Integer	The CEM weapon number of a red weapon system.
RED.STYLIZED. LOS	Attribute - real of a compound entity	The quantity of a red weapon system lost to a blue weapon system in a sample.
RED.WPN	Permanent entity-Integer	The index value of a modeled red force weapon system, value 0 to N.RED.WPN.

RED.WPN.PTR	Attribute-Integer	A pointer to the red weapon associated with a given ESD, value 0 to N.RE.WPN.
RD.WPN.NO	Attribute - real	The CEM weapon number used for mapping CEM to APP numbers.
REPLACEMENT	Attribute - real	The quantity of a blue *weapon system replaced* to the theater stocks in a given day.
RETURNED.TO. DUTY	Attribute - real	The quantity of a blue weapon system repaired or returned to duty in a given day.
REPP.POOL	Attribute - real	The quantity of a blue weapon system issued from the theater pool in a given day.
RETURN.POOL	Attribute - real	The quantity of a blue weapon system repaired at GS maintenance level and returned to the theater stock pool in a given day.
R.CEM.WPN	Permanent entity-Integer	The index value of a modeled red weapon associated with its CEM weapon identification number. Value from 0 to NR.CEM.WPN which is set to 6.
R.QTY.INDEX	Attribute-real	A value of the Red weapon associated with an ESD used to identify and array location, value from 0 to N.RED.WPN.
R.QTY.LOS.	Attribute - real of a compound entity	The quantity of a red weapon system lost in a sample for a given day.

R.STYLIZED.QTY	Attribute - real of a compound entity	The quanity of a red weapon system in the stylized array sample.
R.RATIO	Attribute - real of a compound entity	The ratio of the actual quantity of red system to the stylized quantity of a red system in a given day.
SAMPLE	Permanent entity-Integer	The index value of a stylized sample resulsts modeled, associated with the COSAGE number of samples. Value from 0 to N.SAMPLE, normally 4.
SURV.ASSET	Attribute - real	The quantity of a blue weapon system surviving in a given day.
TDEPLOYMENT	Attribute - real	The quantity of a blue weapon system deployed to the theater in a given day.
TREPLACEMENT	Attribute - real	The quantity of a blue weapon system replaced in theater stocks in a given day.
TRETURN.TO. DUTY	Attribute - real	The quantity of a blue weapon system returned to units from DS maintenance in a given day.
TREPP.POOL	Attribute - real	The quantity of a blue weapon system issued from the theater replacement pool in a given day.
TRETURN.POOL	Attribute - real	The quantity of a blue weapon system repaired and returned to the theater replacement pool in a given day.

TRB.QTY.ON. HAND	Attribute - real of a compound entity	The quantity of a blue (CEM) weapon in the sample on a given day; for mapping CEM to APP quantities.
TB.QTY.ON. HAND	Attribute - real of a compound entity	The quantity of a blue (CEM) weapon in a CEM sample on a given day.
TK.KILL	Attribute - real of a compound entity	The quantity of a blue (CEM) weapon lost as a K-kill in a CEM sample on a given day.
TM.KILL	Attribute - real of a compound entity	The quantity of a blue CEM weapon lost as an M-kill in a CEM sample in a given day.
TR.QTY.LOSS	Attribute - real of a compound entity	The quantity of a red CEM weapon lost to K-kill and M-kill in a CEM sample on a given day.
TRK.KILL	Attribute - real of a compound entity	The quantity of a blue CEM weapon lost as a K-kill in a combat sample on a given day.
TRM.KILL	Attribute - real of a compound entity	The quantity of a blue CEM weapon lost as an M-kill in a combat sample in a given day.
TRR.QTY.LOSS	Attribute - real of a compound entity	The quantity of a red CEM weapon lost as K-kills and M-kills in a CEM sample on a given day; used to map CEM to APP data.
TSURV.ASSET	Attribute-Real	The input quantity of a blue weapon system (from CEM) that has survived the day's engagements.

2.1.3 PROGRAM PROCESSING: The MAIN2 routine is the program driver and calls ESD.MAP, and then RESET.TOTAL1, DAILY.INPUT3, RATIO.COMP and ESD.COMP1 in order for each day of theater combat

modeled. Typically, 180 days of a campaign long war are modeled; thus 180 calls to each routine would be made. The Preamble declares the global data structure including arrays which are known as compound entities in the SIMSCRIPT II.5 programming language. The only argument passed between MAIN and the subroutines is the value of the day modeled. The high level program features are depicted in Figure III.2.10.

2.1.3.A PROGRAM RUN DESCRIPTION: The procedure or "START" file to execute the ESD program is depicted and discussed in Volume III, Chapter 2 of this documentation set. The object program and source code resides in permanently cataloged program file elements under the current APP user/analyst's computer user identification number. The execution runstream is designed to be submitted as a batch run to the system. The submission is normally made in the demand mode from a computer terminal, though a punched card deck could be submitted to the computer operations dispatcher. During the program execution, selected input data and computations are written out to either the execution runstream **APPPRINT file (Unit 6) or the output file, **AMMOUT (Unit 9). The maintenance programmer or analyst can trace the flow of execution through this medium.

2.1.3.B PROGRAM LOGIC: The program is flow charted in Figure III.2.11 (MAIN2), Figure III.2.12 (ESD.MAP) III.2.13 (RESET.TOTAL1), III.2.14 (DAILY.INPUT3), III.2.15 (RATIO.COMP), and III.2.16 (ESD.COMP1). The source code listings are depicted in Figures III.2.17 (PREAMBLE) through III.2.23.

2.1.3.C PROCESSING FEATURES: The ESD program performs the following functions.

MAIN 2

- oo Reads Input data, writes selected data.
- oo Equivalences/maps CEM weapon data to combat sample (COSAGE) data.
- oo Read in stylized quantities.
- oo Computes stylized quantities for red weapons 5 and 6.
- oo Calls ESD.MAP to read and write mapping data.
- oo For each combat day:
    - ooo Calls Reset.Total - performs no function.
    - ooo Calls Daily.Input3, given the day.
        - oooo Reads deployment, replacement data.

oooo Performs mapping adjustments:

Blue weapon 3 quantity divided by 4.
Blue weapon 4 quantity divided by 1.33.

oooo Writes out data

oooo Maps the 8 CEM sample data to 4 combat samples.

oooo Performs correctional computations for mapping:

Blue weapon 3 on hand x .25
Blue weapon 4 on hand x .75
Blue weapon 10 on hand x .50
Blue weapon 14 on hand x .50

ooo Calls Ratio.Comp given the day.

oooo For every blue weapon system, for every sample, computes the ratio of on-hand to stylized quantities.

oooo For blue weapons 2 thru 14 (armor) computes the total armor system quantity.

oooo Computes the ratio of actual armor to stylized armor.

ooo Calls ESD.COMP1 given the day.

oooo Computes the total possible loss of each red-weapon against each blue weapon in each sample as the ratio times the stylized loss.

oooo For each sample, for equivalent stylized days 1 through 40 computes the ESD value as the ratio times the quantity lost divided by the possible total loss.

oo Returns to MAIN to index to the next combat day.

2.2 OPERATING ENVIRONMENT: The ESD program is implemented on the USACAA UNIVAC 1100/82 computer. The program is submitted in the demand mode and is processed in a batch environment for efficient use of resources. The program requires approximately 3 minutes of CPU time for execution. The program is developed under the UNIVAC architecture, requiring 20[illegible] words (36-bit) of main core memory for execution.

2.2.1 HARDWARE: The UNIVAC 1100/82 mainframe and perphiral devices supports the program maintenance and execution. The execution runstream fixed or removable disk (on-line) storage requirements are as follows:

UNIT 6 - 1600 (breakpoint file) tracks
UNIT 9 - default, 128 tracks

UNIT 16 - default, 128 tracks
UNIT 17 - default, 128 tracks
UNIT 40 - default, 128 tracks

Tape processing is not a part of the program execution. A (user) computer terminal to the system is required. A printer is employed for a hard copy of the output. Normally the operating system executive directs the assignment of the mass storage (disk) devices.

The hardware requirements for recopilation are within the capability of the USACAA computer. Refer to item U, Appendix A, for device requirements.

2.2.2 SUPPORT SOFTWARE: The program compilation and execution requires the following system processors:

@SIM25 - The SIMSCRIPT II.5 language processor.

@MAP - The MAP processor or collector to form the executable program from the relocatable object code.

@ED - The system editor processor.

SDDL - The program may be processed through the Software Design and Documentation Language (SDDL) processor.

2.2.2.A OPERATING SYSTEM: The program was developed and implemented on the UNIVAC 1100/82 operating system. The features of the EXECUTIVE-8 control language and the standard system library (SYSLIB and SYS$RLIB$) provide the essential support.

2.2.2.B COMPILER: The operating system library contains the SIMSCRIPT II.5 compiler and is accessed by the EXECUTIVE-8 command @SIM25. Refer to reference item U, Appendix A for recompilation (full and partial) procedures, sample runstream and compiler diagnostics. The program was developed under the release 6.3 compiler. Release 7.0 was installed in July 1981 and this program is compatable without alteration; i.e., there are no compiler enhancements that are in conflict with the program.

2.2.3 DATA BASE: The data base and files necessary for program execution were discussed in paragraph 2.1.2.A. These files are all FIELDDATA and in System Data Format (SDF). These files exist as user/analyst cataloged files and file elements and are not part of a formal data base structure.

2.3 MAINTENANCE PROCEDURES: The relative size of the program minimizes the maintenance. The maintenance extends to insuring that a copy of the symbolic (source) code is preserved (on tape or cards), that page by page changes are made to this documentaion as changes/maintenance is performed, and that the source code file be annotated with comments to insure that future programmers can track the changes. The following

information is pertinent to the program maintenance (space provided for notes):

Source (Symbolic) code Filename.Elementname:

Absolute (object) code Filename.Elementname:

Space Required, source code:

Space Required, absolute code:

Archived tape label, location:

Read/write keys; established by current custodian; names:

2.3.1 PROGRAMMING CONVENTIONS: The maintenance programmer should review Appendix A items S, T and U for the SIMSCRIPT II.5 syntax. This program applies the SIMSCRIPT II.5 programming language features such as the IF-ELSE-ALWAYS structured programming capabilities and has no "GO-TO 'LABEL'" commands in the program. The following features high light the programming conventions:

- o The background mode for all variables declared as follows:

PREAMBLE	-	REAL
MAIN2	-	INTEGER
ESDMAP	-	INTEGER
DAILY.INPUT	-	REAL
ESD.COMP1	-	REAL
RATIO.COMP	-	REAL
RESET.TOTAL1	-	INTEGER

  Unless specifically declared otherwise in the program, the variables used are set to, and computed as, the background mode. SIMSCRIPT II.5 provides for mixed-mode expressions and computations.

- o The program structure is highlighted with 5-column indentations of the code reflecting the logic and level of activity.

- o Programming syntactical substitutions are made or declared in the preamble on lines (records) 84 through 102, via "Define to mean" statements.

  These substitutions are employed in the program for clarity and understanding and any programming changes made must follow the

declared substitutions. These substitutions enable a programmer to process the source code through the Software Design and Documentation Language (SDDL) as well, using the substitutions as keywords in the SDDL processor.

- o Comments are preceeded by the '' (double apostrophe) characters and any characters following this notation in a record are ignored by the compiler.

- o Because the UNIVAC ASCII printer does not print the quote symbol ("), quotes used to denote alpha literals may not show up on computer print-outs.

- o GO-TO statements are not employed in the program.

- o Programmer developed and formatted PRINT statements are used liberally in the program to verify input data and computations.

- o The define-to-mean LOOP and ENDLOOP syntax are used to highlight do-loops.

2.3.2 VERIFICATION PROCEDURES: Program verification is accomplished by performing test execution runs of the program with sample data followed by a review of the run output files. This is followed by hand calculations with the same data using the coded mathematical expressions and a comparison of the results.

2.3.3 ERROR CORRECTION PROCEDURES: The errors that may be associated with the program are: 1) Input data errors, either in content or format; 2) Program errors or bugs and 3) operating system errors. Debugging and error correction is accomplished by an examination of the output. The program does not employ any programmed debugging aids or calls to an "error-found" subroutine.

- o Data (input) errors — data presented in a mode (integer, real, alphanumeric) other than expected by the program may cause an error which will be noted in the TRACE.

  Data presented in excess of reserved arrays (declared entities) will induce an error; the error may manifest itself at the point of error or later in a program read. Debugging of data must be accomplished by a visual examination of the data files (print copy or at the terminal), or tracing the input progress via the output files.

- o Program errors - The SIMSCRIPT II.5 programming language can be employed to use the following capabilities:

  - oo Debug statements: Source code level debugging is best accomplished through the use of coded debug statements, which are accessed through coded logic tests, at the approximate point of a suspected error.

oo TRACE - The SIMSCRIPT II.5 library contains a tracing routine that traces back all subroutine calls from the error location, and prints a dump, in octal, of the recursive storage for each subroutine. A verification of variable values can quickly be accomplished using the trace information along with the compiler listing.

oo SNAP.R - The SIMSCRIPT II.5 library contains a snapshot routine. The programmer may develop a substitute routine, by the same name of his/her own design.

Upon error, the routine provides lists of all the Preamble declared entities, events, processes, etc. An examination of these variable values aid in the verification of the program and possible sources of error.

Program errors are resolved by checking the compilation listing, the relocatable element file listing after program collection (@MAP) to insure that all references and call addresses are resolved. A post mortum dump may be produced by using the @PMD Executive-8 command in the execution runstream, and then examining the contents of the instruction (I-BANK) bank and data bank (D-BANK).

o System error - the run output file (TPF$) will list the system diagnosed errors for subsequent tracing and correction. These errors often occur as a result of an error in the runstream.

2.3.4 SPECIAL MAINTENANCE PROCEDURES: No special maintenance procedures are developed or required for this program.

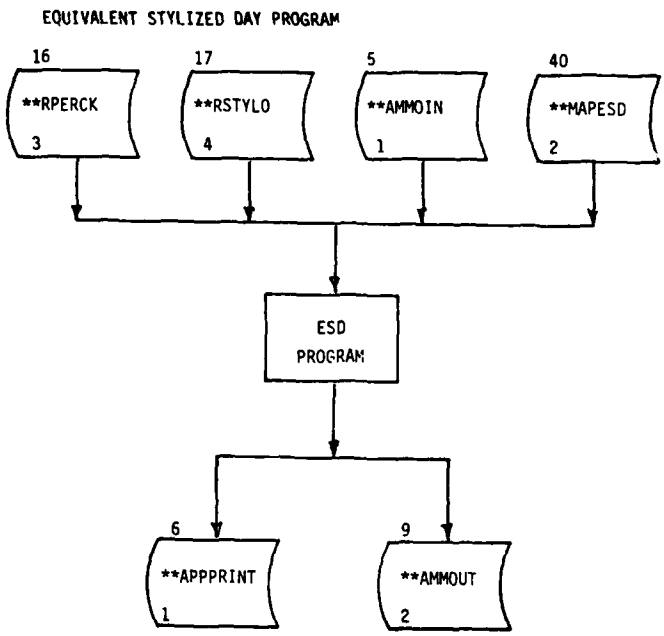


Figure III.2.1

1:	30	6	4	40	8	
2:	1	12	12	5	12	8
3:	1	12	12	5	12	8
4:	1	3	2	2	99	5
5:	33	26	30	49	99	16
6:	15	14	99			
7:	43	44	45	99	99	48
8:	99	99	99	99	99	99
9:	99	99	99			
10:	1	2	3			
11:	4	5	6			
12:	1	2	3	4	5	6
13:	11500	11500	11500	11500		
14:	55	59	59	59		
15:	61	59	59	59		
16:	189	189	189	189		
17:	16	12	12	12		
18:	226	226	226	226		
19:	27	27	27	27		
20:	9	9	12	9		
21:	34	34	34	34		
22:	132	132	132	132		
23:	292	292	292	292		
24:	33	33	33	33		
25:	6	6	6	6		
26:	108	108	108	108		
27:	28	28	28	28		
28:	47	27	27	18		
29:	180					
30:	1.25286+05	1200.0	81.937	1265.5	81.937	1.23335+05
31:						
32:						
33:	1371.0	90.250	7.0062	95.855	7.0062	1367.1
34:	1752.0	20.000	9.6187	27.695	9.6187	1679.9
35:	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
36:	324.00	1.5000	7.6000	7.5800	7.6000	244.90
37:	202.00	9.5000	9.9750	17.480	9.9750	80.600
38:	592.00	15.250	8.4312	21.995	8.4312	368.80
39:	740.00	21.750	.35625	22.035	.35625	738.20
40:	1462.0	58.250	24.225	77.630	24.225	949.40
41:	1658.0	0.00000	14.131	11.305	14.131	1151.7
42:	755.00	0.00000	46.550	37.240	46.550	182.00
43:	660.00	11.000	27.669	33.135	27.669	380.00
44:	344.00	12.000	4.5125	15.610	4.5125	224.10
45:						
46:						
47:	1229.0	15.000	60.562	63.450	60.562	692.00
48:	2496.0	25.500	115.90	118.22	115.90	1452.0
49:	1230.0	16.000	66.975	69.580	66.975	521.40
50:	347.00	17.750	14.369	29.245	14.369	256.50
51:	36.000	3.0000	2.2562	4.8050	2.2562	16.800

Figure III.2.2

52:	232.00	4.0000	7.7187	10.175	7.7187	149.90						
53:	700.00	33.450	32.894	59.565	32.894	451.90						
54:	1337.0	3.5000	49.519	43.115	49.519	719.30						
55:	1176.0	8.5000	56.406	53.625	56.406	610.70						
56:	2090.0	167.25	147.01	284.86	147.01	1145.9						
57:	2946.0	0.00000	164.94	131.95	164.94	1232.8						
58:	1330.0	31.750	59.375	79.250	59.375	833.40						
59:												
60:												
61:	233.00	2.7500	.23750	2.9400	.23750	213.50						
62:	150.00	0.00000	.11875	9.50000-02	.11875	120.30						
63:	198.00	0.00000	.59375	.47500	.59375	161.70						
64:	20.000	0.00000	0.00000	0.00000	0.00000	17.900						
65:	180.00	.75000	.35625	1.0350	.35625	156.60						
66:												
67:												
68:	495.00	.75000	0.00000	.75000	0.00000	494.90						
69:	560.00	0.00000	0.00000	0.00000	0.00000	559.80						
70:	2223.0	3.7500	0.00000	3.7500	0.00000	2222.8						
71:	0.00000	13.500	0.00000	13.500	0.00000	0.00000						
72:	1946.0	105.25	0.00000	105.25	0.00000	1943.8						
73:	2367.0	0.00000	0.00000	0.00000	0.00000	2270.4						
74:	5476.0	1104.7	0.00000	1104.7	0.00000	5463.1						
75:	404.00	8.0000	0.00000	8.0000	0.00000	403.50						
76:	420.00	200.50	0.00000	200.50	0.00000	418.90						
77:	176.00	52.250	0.00000	52.250	0.00000	175.50						
78:	75.000	39.000	0.00000	39.000	0.00000	74.600						
79:	556.00	44.250	0.00000	44.250	0.00000	554.10						
80:												
81:												
82:	18.000	18.750	0.00000	18.750	0.00000	18.000						
83:	816.00	16.500	0.00000	16.500	0.00000	815.40						
84:	324.00	2.2500	0.00000	2.2500	0.00000	323.70						
85:	468.00	8.5000	0.00000	8.5000	0.00000	467.50						
86:	1194.0	30.250	0.00000	30.250	0.00000	1192.8						
87:	150.00	0.00000	0.00000	0.00000	0.00000	149.90						
88:	332.00	2.7500	0.00000	2.7500	0.00000	331.70						
89:	160.00	1.7500	0.00000	1.7500	0.00000	159.90						
90:												
91:												
92:												
93:												
94:												
95:												
96:												
97:												
98:	.0	.0	.0									
99:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
100:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
101:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
102:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
103:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
104:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
105:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
106:	.0	.0	.0									
107:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
108:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Figure III.2.2 (Cont.)

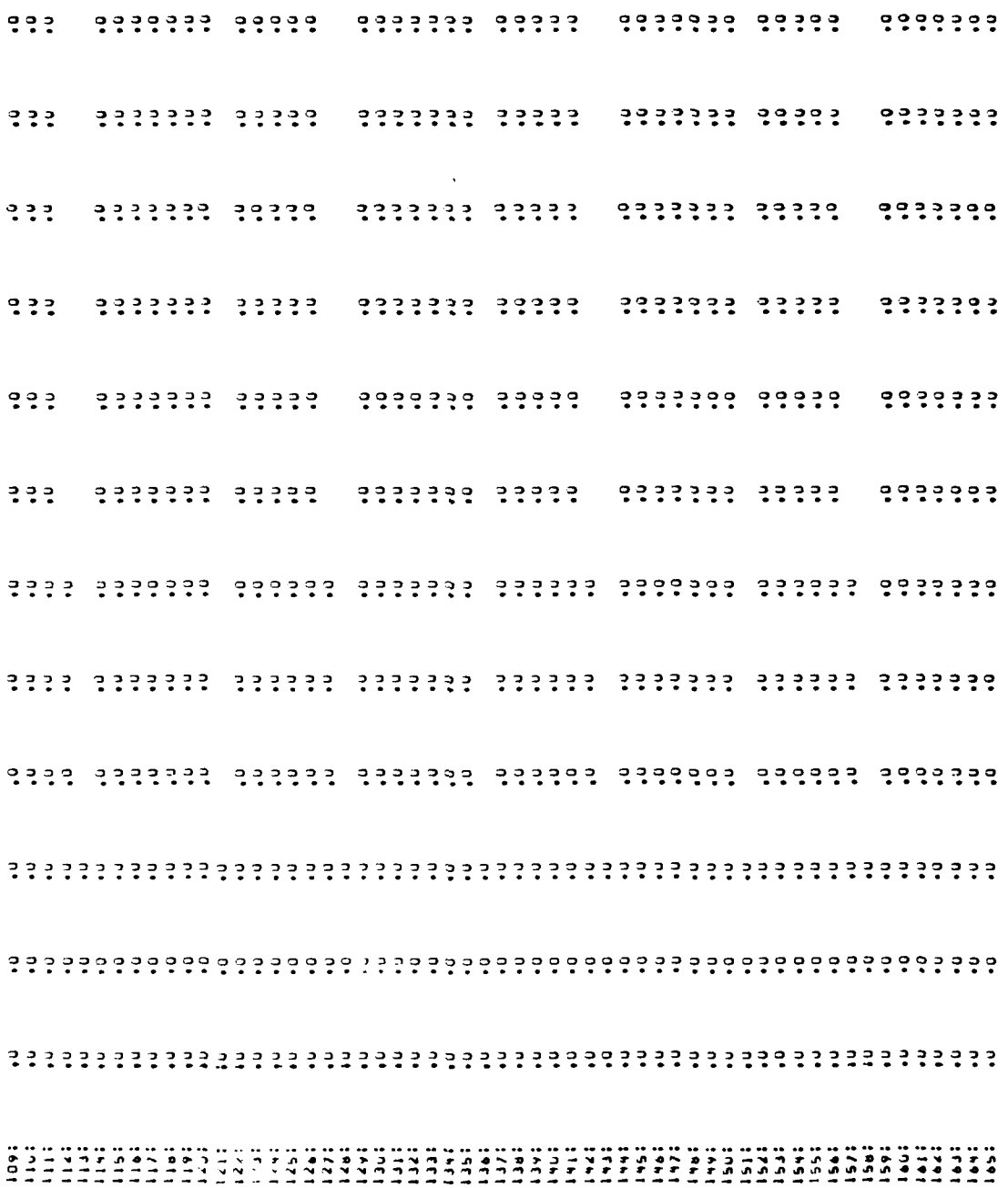


Figure III.2.2 (Cont.)

166:	.0	.0	.0									
167:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
168:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
169:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
170:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
171:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
172:	.0	.0	.0	.0	.0	.0						
173:	7342.2	360.3	49.1									
174:	258.9	14.2	6.6	24.0	.2	1.1	.0	.0	.0	.0	.0	.0
175:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
176:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
177:	49.3	.5	2.3	216.5	.9	7.7	119.0	2.7	8.0	.0	.0	.0
178:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
179:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
180:	10.7	.3	.2	.0	.0	.0	.0	.0	.0	1.6	.1	.0
181:	.0	.0	.0									
182:	32.7	.9	.0	46.0	3.2	.0	158.7	4.0	.0	.0	.0	.0
183:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
184:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
185:	4.7	.0	.0	214.1	2.1	2.1	85.0	.9	.9	122.8	1.2	1.2
186:	313.3	3.1	3.1	39.4	.4	.4	87.1	.9	.9	42.0	.4	.4
187:	1333.9	111.2	57.1	28.7	85.8	206.5						
188:	.0	.0	.0									
189:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
190:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
191:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
192:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
193:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
194:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
195:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
196:	.0	.0	.0									
197:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
198:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
199:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
200:	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Figure III.2.2 (Cont.)

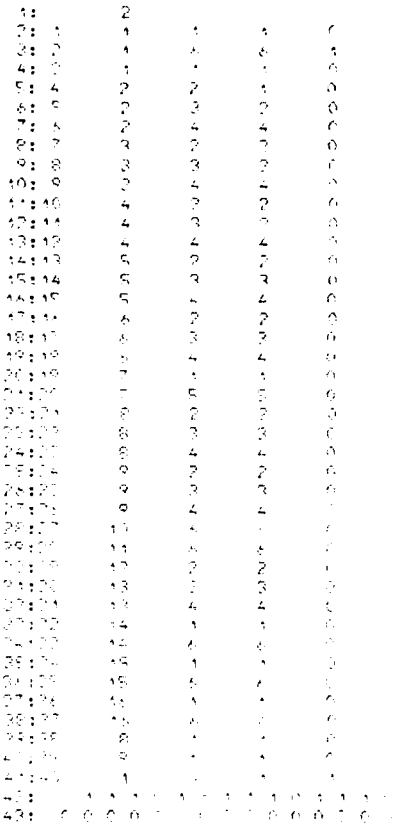


Figure III.2.3

UNCLASSIFIED*JYESDGENTTT.RPERCK/18JUL80J

1	1 16.5	57	27 99.9				
2	2 16.5	58	28 99.9				
3	3 16.5	59	29 99.9				
4	4 16.5	60	30 99.9				
5	5 99.9	61	1 99.9	114	24 99.9		
6	6 16.5	62	2 18.9	115	25 99.9		
7	7 99.9	63	3 18.9	116	26 99.9		
8	8 99.9	64	4 18.9	117	27 99.9		
9	9 99.9	65	5 99.9	118	28 99.9		
10	10 16.5	66	6 18.9	119	29 99.9		
11	11 99.9	67	7 18.9	120	30 99.9		
12	12 16.5	68	8 18.9				
13	13 99.9	69	9 18.9				
14	14 99.9	70	10 18.9				
15	15 99.9	71	11 99.9				
16	16 16.5	72	12 18.9				
17	17 16.5	73	13 18.9				
18	18 16.5	74	14 18.9				
19	19 99.9	75	15 99.9				
20	20 99.9	76	16 18.9				
21	21 16.5	77	17 18.9				
22	22 99.9	78	18 18.9				
23	23 99.9	79	19 99.9				
24	24 99.9	80	20 99.9				
25	25 99.9	81	21 18.9				
26	26 99.9	82	22 99.9				
27	27 99.9	83	23 99.9				
28	28 99.9	84	24 99.9				
29	29 99.9	85	25 99.9				
30	30 99.9	86	26 99.9				
31	1 99.9	87	27 99.9				
32	2 60.	88	28 99.9				
33	3 60.	89	29 99.9				
34	4 60.	90	30 99.9				
35	5 99.9	91	1 99.9				
36	6 60.	92	2 40.				
37	7 47.	93	3 40.				
38	8 48.	94	4 40.				
39	9 48.	95	5 99.9				
40	10 48.	96	6 40.				
41	11 99.9	97	7 10.				
42	12 48.	98	8 10.				
43	13 99.9	99	9 10.				
44	14 48.	100	10 10.				
45	15 99.9	101	11 99.9				
46	16 99.9	102	12 10.				
47	17 14.	103	13 10.				
48	18 99.9	104	14 10.				
49	19 99.9	105	15 99.9				
50	20 99.9	106	16 9.				
51	21 99.9	107	17 9.				
52	22 99.9	108	18 9.				
53	23 99.9	109	19 99.9				
54	24 99.9	110	20 99.9				
55	25 99.9	111	21 9.				
56	26 99.9	112	22 99.9				
		113	23 99.9				

Figure III.2.4

UNCLASSIFIED*37ESDGENIII*RSTYLO718JUL80

1	838.	1810.	660.	658.
2	[illegible]	141.	0.	66.
3	[illegible]	[illegible]	0.	66.
4	[illegible]	[illegible]	0.	67.
5	2.	190.	0.	27.
6	118.	56.	0.	139.
7	112.	132.	0.	69.
8	0.	0.	0.	.32
9	3141.	3129.	2578.	[illegible]
10	1564.	1252.	1665.	1512.
11	614.	1228.	161.	1378.
12				
13	13.7	4.7	8.23	1.29
14	[illegible]	5.66	4.46	.75
15	5.71	26.	.44	17.7
16	4.23	5.71	1.94	.03
17	.01	1.38	.07	.58
18	47.4	47.	11.4	9.6
19	24.7	10.6	8.2	7.8
20	7.55	1.58	6.76	5.25
21	2.92	7.63	6.45	13.9
22	1.48	1.85	1.76	5.05
23	[illegible]	2.21	.18	9.74
24				
25	4.95	9.22	1.09	.23
26	1.49	7.47	5.25	.85
27	6.91	8.29	.27	2.09
28	.78	3.01	.0	.4
29	[illegible]	6.39	.1	.14
30	[illegible]	16.3	11.2	[illegible]
31	12.4	2.6	.0	[illegible]
32	.46	4.	1.02	.12
33	16.9	1.6	2.07	1.95
34	[illegible]	.6	[illegible]	.01
35	[illegible]	2.18	.36	2.32
36	[illegible]	.0	.0	.04
37	48.4	59.2	14.9	106.
38	6.21	5.85	4.98	2.17
39	2.83	3.2	.0	3.34
40				
41	[illegible]	23.9	3.14	.0
42	17.2	10.7	8.92	5.07
43	23.4	13.9	2.67	1.76
44	.99	5.13	.73	.0
45	[illegible]	3.34	.1	.1
46	49.4	39.6	5.2	4.1
47	12.7	4.7	4.6	.2
48	5.99	4.96	1.54	.92
49	14.6	13.8	2.62	3.53
50	[illegible]	1.76	.11	[illegible]
51	7.35	7.39	2.75	.95
52	.1	.0	.0	.06
53	69.8	85.5	21.4	153.
54	8.96	8.43	7.18	3.12
55	[illegible]	4.62	3.50	4.83

Figure III.2.5

```
6759:99.   0.    0.08 0.03 0.   0.02 0.02 0.   0.27 0.   0.18 0.17 0.   0.32 0.   0.21 0.20 0.   0.05 0.06
6760: 0.16 0.13 0.14 0.05 0.09 0.10 0.11 0.03 0.03 0.01 0.08 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
6761:99.   0.    0.11 5.60 0.82 2.39 2.23 0.   3.41 0.50 1.45 1.36 0.   20.00 2.93 6.52 7.98 0.  2.93 2.06
6762: 9.74 0.15 5.59 0.10 3.37 0.12 4.42 0.04 1.63 1.34 0.62 4.80 0.01 0.03 0.01 0.03 0.02 0.04 0.00 0.29
6763:99.   0.    0.73 0.47 0.   0.15 0.14 0.   0.89 0.   0.29 0.27 0.   0.62 0.   0.27 0.25 0.   0.07 0.07
6764: 0.61 1.13 0.37 0.77 0.23 0.07 0.29 0.46 0.16 0.01 0.03 0.02 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
6765:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6766:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6767:   2500.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6768:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6769:     63.4    0.7    1.4    4.1    0.     0.5    0.     0.     0.     1.7    0.     1.7   39.7    1.7    0.
6770:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6771:   2552.3    0.6    1.1    3.3    0.     0.4    0.     0.     0.     1.3    0.     1.3   31.7    1.3    0.
6772:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6773:      0.0   -0.0    1.4    4.1    0.    -0.0    0.0   -0.0    0.0    0.0    0.     0.0    0.0    0.0    0.
6774:     -0.0    0.0    0.0    0.     0.     0.0    0.     0.     0.     0.     0.     0.     0.     0.     0.
6775:329782.   2053.1 1083.  3257.1    0.    93.8 4962.4  680.1   98.6  374.1    0.    84.8 1019.8  374.1    0.
6776:     90.   1101.9  326.     0.     0.   115.9    0.     0.     0.     0.     0.     0.     0.     0.     0.
6777:329782.   2053.1 1083.  3257.1    0.    93.8 4962.4  680.1   98.6  374.1    0.    84.8 1019.8  374.1    0.
6778:     90.   1101.9  326.     0.     0.   115.9    0.     0.     0.     0.     0.     0.     0.     0.     0.
6779:     10.9    0.     0.2    0.6    1.     0.     0.     0.     0.1    0.     1.     0.     0.     0.     1.
6780:      0.     0.1    0.     1.     1.     0.     1.     1.     1.     1.     1.     1.     1.     1.     1.
6781:     10.1    0.     0.4    1.1    1.     0.     0.     0.     0.     0.     1.     0.     0.     0.     1.
6782:      0.     0.1    0.     1.     1.     0.     1.     1.     1.     1.     1.     1.     1.     1.     1.
6783:     47.2    0.     0.     0.     1.     0.     0.     0.     0.     0.2    1.     0.4    5.5    0.2    1.
6784:      1.7   20.2    0.     1.     1.     2.1    1.     1.     1.     1.     1.     1.     1.     1.     1.
6785:    203.4    0.     4.6   13.7    1.     0.     0.6    0.1    0.     0.     1.     0.     0.6    0.     1.
6786:      0.1    1.6    0.5    1.     1.     0.1    1.     1.     1.     1.     1.     1.     1.     1.     1.
6787:      1.9    0.2    0.1    0.4    1.     0.     0.     0.     0.     0.     1.     0.     0.2    0.     1.
6788:      0.     0.1    0.     1.     1.     0.     1.     1.     1.     1.     1.     1.     1.     1.     1.
6789:      2.8    0.     0.2    0.7    1.     0.     0.     0.     0.     0.     1.     0.     0.3    0.     1.
6790:      0.     0.1    0.     1.     1.     0.     1.     1.     1.     1.     1.     1.     1.     1.     1.
6791:      8.5    0.     0.     0.     1.     0.3    0.     0.     0.     0.9    1.     1.4   40.1    0.9    1.
6792:      1.7   20.2    0.     1.     1.     2.1    1.     1.     1.     1.     1.     1.     1.     1.     1.
6793:     35.3    0.     2.5    7.6    1.     0.     0.     0.     0.     0.0    1.     0.2    5.0    0.0    1.
6794:      0.1    1.6    0.5    1.     1.     0.1    1.     1.     1.     1.     1.     1.     1.     1.     1.
6795:99.   0.    0.01 0.01 0.   0.01 0.01 0.   0.03 0.   0.03 0.03 0.   0.02 0.   0.02 0.02 0.   0.00 0.07
6796: 0.02 0.02 0.02 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.   0.   0.   0.   0.   0.   0.00 0.00
6797:99.   0.    0.01 0.   0.   0.01 0.00 0.   0.   0.   0.06 0.06 0.   0.   0.   0.07 0.06 0.   0.   0.
6798: 0.04 0.01 0.03 0.01 0.02 0.01 0.02 0.00 0.01 0.00 0.00 0.01 0.   0.   0.   0.   0.   0.   0.00 0.00
6799:99.   0.    0.12 6.51 1.65 2.36 2.21 0.   4.26 1.00 1.54 1.44 0.   29.44 6.18 8.65 8.28 0.  2.62 2.59
6800:10.05 0.16 6.20 0.11 4.22 0.13 4.81 0.04 1.77 1.51 0.99 5.66 0.01 0.03 0.01 0.03 0.02 0.04 0.00 0.29
6801:97.   0.    0.05 0.   0.   0.23 0.21 0.   0.   0.   0.54 0.51 0.   0.   0.   0.30 0.28 0.   0.07 0.
6802: 0.92 1.03 0.31 0.70 0.21 0.80 0.24 0.44 0.13 0.01 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 0.02 0.00
6803:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6804:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6805:   2500.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6806:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6807:     63.4    0.7    1.4    4.1    0.     0.5    0.     0.     0.     1.7    0.     1.7   39.7    1.7    0.
6808:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6809:   2552.3    0.6    1.1    3.3    0.     0.4    0.     0.     0.     1.3    0.     1.3   31.7    1.3    0.
6810:      0.      0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.     0.
6811:      0.0   -0.0    1.4    4.1    0.    -0.0    0.0   -0.0    0.0    0.0    0.     0.0    0.0    0.0    0.
6812:     -0.0    0.0    0.0    0.     0.     0.0    0.     0.     0.     0.     0.     0.     0.     0.     0.
6813:329782.   2053.1 1083.  3257.1    0.    93.8 4962.4  680.1   98.6  374.1    0.    84.8 1019.8  374.1    0.
6814:     90.   1101.9  326.     0.     0.   115.9    0.     0.     0.     0.     0.     0.     0.     0.     0.
6815:329782.   2053.1 1083.  3257.1    0.    93.8 4962.4  680.1   98.6  374.1    0.    84.8 1019.8  374.1    0.
```

Figure III.2.6

```
APPPRINT

  1:@XQT 56ESOGEN/PTF/FTP.ABS3
  2:    30 BLUE WPNS      6 RED WPNS     4 SAMPLES    40 ESD   8 N.CEM.SAMPLE
  3:     1   12   12     5   12     8
  4:     1   12   12     5   12     8
  5:
  6:/READ IN THE ESD MAP DATA/
  7:ESD =    1  ESD.SEQ.NO =    1  RED.WPN =    1  BLUE.WPN =    1 B.RATIO.INDEX =  0
  8:ESD =    2  ESD.SEQ.NO =    2  RED.WPN =    6  BLUE.WPN =    1 B.RATIO.INDEX =  1
  9:ESD =    3  ESD.SEQ.NO =    3  RED.WPN =    1  BLUE.WPN =    1 B.RATIO.INDEX =  0
 10:ESD =    4  ESD.SEQ.NO =    4  RED.WPN =    2  BLUE.WPN =    2 B.RATIO.INDEX =  0
 11:ESD =    5  ESD.SEQ.NO =    5  RED.WPN =    3  BLUE.WPN =    2 B.RATIO.INDEX =  0
 12:ESD =    6  ESD.SEQ.NO =    6  RED.WPN =    4  BLUE.WPN =    2 B.RATIO.INDEX =  0
 13:ESD =    7  ESD.SEQ.NO =    7  RED.WPN =    2  BLUE.WPN =    3 B.RATIO.INDEX =  0
 14:ESD =    8  ESD.SEQ.NO =    8  RED.WPN =    3  BLUE.WPN =    3 B.RATIO.INDEX =  0
 15:ESD =    9  ESD.SEQ.NO =    9  RED.WPN =    4  BLUE.WPN =    3 B.RATIO.INDEX =  0
 16:ESD =   10  ESD.SEQ.NO =   10  RED.WPN =    2  BLUE.WPN =    4 B.RATIO.INDEX =  0
 17:ESD =   11  ESD.SEQ.NO =   11  RED.WPN =    3  BLUE.WPN =    4 B.RATIO.INDEX =  0
 18:ESD =   12  ESD.SEQ.NO =   12  RED.WPN =    4  BLUE.WPN =    4 B.RATIO.INDEX =  0
 19:ESD =   13  ESD.SEQ.NO =   13  RED.WPN =    2  BLUE.WPN =    5 B.RATIO.INDEX =  0
 20:ESD =   14  ESD.SEQ.NO =   14  RED.WPN =    3  BLUE.WPN =    5 B.RATIO.INDEX =  0
 21:ESD =   15  ESD.SEQ.NO =   15  RED.WPN =    4  BLUE.WPN =    5 B.RATIO.INDEX =  0
 22:ESD =   16  ESD.SEQ.NO =   16  RED.WPN =    2  BLUE.WPN =    6 B.RATIO.INDEX =  0
 23:ESD =   17  ESD.SEQ.NO =   17  RED.WPN =    3  BLUE.WPN =    6 B.RATIO.INDEX =  0
 24:ESD =   18  ESD.SEQ.NO =   18  RED.WPN =    4  BLUE.WPN =    6 B.RATIO.INDEX =  0
 25:ESD =   19  ESD.SEQ.NO =   19  RED.WPN =    1  BLUE.WPN =    7 B.RATIO.INDEX =  0
 26:ESD =   20  ESD.SEQ.NO =   20  RED.WPN =    5  BLUE.WPN =    7 B.RATIO.INDEX =  0
 27:ESD =   21  ESD.SEQ.NO =   21  RED.WPN =    2  BLUE.WPN =    8 B.RATIO.INDEX =  0
 28:ESD =   22  ESD.SEQ.NO =   22  RED.WPN =    3  BLUE.WPN =    8 B.RATIO.INDEX =  0
 29:ESD =   23  ESD.SEQ.NO =   23  RED.WPN =    4  BLUE.WPN =    8 B.RATIO.INDEX =  0
 30:ESD =   24  ESD.SEQ.NO =   24  RED.WPN =    2  BLUE.WPN =    9 B.RATIO.INDEX =  0
 31:ESD =   25  ESD.SEQ.NO =   25  RED.WPN =    3  BLUE.WPN =    9 B.RATIO.INDEX =  0
 32:ESD =   26  ESD.SEQ.NO =   26  RED.WPN =    4  BLUE.WPN =    9 B.RATIO.INDEX =  0
 33:ESD =   27  ESD.SEQ.NO =   27  RED.WPN =    6  BLUE.WPN =   10 B.RATIO.INDEX =  0
 34:ESD =   28  ESD.SEQ.NO =   28  RED.WPN =    6  BLUE.WPN =   11 B.RATIO.INDEX =  0
 35:ESD =   29  ESD.SEQ.NO =   29  RED.WPN =    2  BLUE.WPN =   13 B.RATIO.INDEX =  0
 36:ESD =   30  ESD.SEQ.NO =   30  RED.WPN =    3  BLUE.WPN =   13 B.RATIO.INDEX =  0
 37:ESD =   31  ESD.SEQ.NO =   31  RED.WPN =    4  BLUE.WPN =   13 B.RATIO.INDEX =  0
 38:ESD =   32  ESD.SEQ.NO =   32  RED.WPN =    1  BLUE.WPN =   14 B.RATIO.INDEX =  0
 39:ESD =   33  ESD.SEQ.NO =   33  RED.WPN =    6  BLUE.WPN =   14 B.RATIO.INDEX =  0
 40:ESD =   34  ESD.SEQ.NO =   34  RED.WPN =    1  BLUE.WPN =   15 B.RATIO.INDEX =  0
 41:ESD =   35  ESD.SEQ.NO =   35  RED.WPN =    6  BLUE.WPN =   15 B.RATIO.INDEX =  0
 42:ESD =   36  ESD.SEQ.NO =   36  RED.WPN =    1  BLUE.WPN =   16 B.RATIO.INDEX =  0
 43:ESD =   37  ESD.SEQ.NO =   37  RED.WPN =    6  BLUE.WPN =   16 B.RATIO.INDEX =  0
 44:ESD =   38  ESD.SEQ.NO =   38  RED.WPN =    1  BLUE.WPN =    8 B.RATIO.INDEX =  0
 45:ESD =   39  ESD.SEQ.NO =   39  RED.WPN =    1  BLUE.WPN =    9 B.RATIO.INDEX =  0
 46:ESD =   40  ESD.SEQ.NO =   40  RED.WPN =    1  BLUE.WPN =    1 B.RATIO.INDEX =  1
 47:/ESD MAP DATA READ IN/
 48:/READ IN ARMOR INDICATORS/
 49:/ARMOR INDICATORS READ IN/
 50:
 51: /READING MAPPING OF SELECTED BLCMAM WEAPONS/
 52:LAST VALUE READ BLUE.ID(BLUE.WPN) WAS   99.
 53:
 54: /READING MAPPING OF SELECTED RDCMAM WEAPONS/
 55:LAST VALUE READ RED.ID(RED.WPN) WAS    6.
 56:
 57: /READING MAPPING OF RDAMCM WPNS/
 58:LAST VALUE READ RD.WPN.NO(6) WAS    6.
 59:
 60: /STYLIZED QUANTITIES READ FOR BLUE WEAPONS AND SAMPLES/
 61:LAST VALUE READ B.STYLIZED .QTY(BLUE.WPN,SAMPLE) WAS    0.
 62:/NUMBER OF DAYS ARE  180
 63:/PERCENT N-KILL FOR RED.WPN 1 TO 4 & BLUE KILLERS READ,LAST WAS 99.9
 64:   1.       1.       1.      86.0
 65:   1.       1.       1.      86.0
 66:   1.       2.       1.      24.4
 67:   1        2.       1.      24.4
 68:   1.       3.       1.       0.0
 69:   1.       3.       1.       0.0
 70:   1.       4.       1.       0.
```

Figure III.2.7

```
 71:   1.      4.      1.      0.
 72:   1.      1.      2.     47.1
 73:   1.      1.      2.     47.1
 74:   1.      2.      2.     31.0
 75:   1.      2.      2.     31.0
 76:   1.      3.      2.      0.
 77:   1.      3.      2.      0.
 78:   1.      4.      2.     31.0
 79:   1.      4.      2.     31.0
 80:   1.      1.      3.     33.0
 81:   1.      1.      3.     33.0
 82:   1.      2.      3.     25.3
 83:   1.      2.      3.     25.3
 84:   1.      3.      3.      0.1
 85:   1.      3.      3.      0.1
 86:   1.      4.      3.     29.6
 87:   1.      4.      3.     29.6
 88:   1.      1.      4.     25.8
 89:   1.      1.      4.     25.8
 90:   1.      2.      4.     25.5
 91:   1.      2.      4.     25.5
 92:   1.      3.      4.      0.1
 93:   1.      3.      4.      0.1
 94:   1.      4.      4.     12.2
 95:   1.      4.      4.     12.2
 96:   1.      1.      5.     14.2
 97:   1.      1.      5.     14.2
 98:   1.      2.      5.     15.0
 99:   1.      2.      5.     15.0
100:   1.      3.      5.      0.
101:   1.      3.      5.      0.
102:   1.      4.      5.     19.0
103:   1.      4.      5.     19.0
104:   1.      1.      6.     87.3
105:   1.      1.      6.     87.3
106:   1.      2.      6.     87.9
107:   1.      2.      6.     87.9
108:   1.      3.      6.      1.4
109:   1.      3.      6.      1.4
110:   1.      4.      6.     30.6
111:   1.      4.      6.     30.6
112:   1.      1.      7.     33.0
113:   1.      1.      7.     33.0
114:   1.      2.      7.     79.8
115:   1.      2.      7.     79.8
116:   1.      3.      7.      1.2
117:   1.      3.      7.      1.2
118:   1.      4.      7.     86.5
119:   1.      4.      7.     86.5
120:   1.      1.      8.     46.8
121:   1.      1.      8.     46.8
122:   1.      2.      8.     25.6
123:   1.      2.      8.     25.6
124:   1.      3.      8.      0.0
125:   1.      3.      8.      0.0
126:   1.      4.      8.     13.1
127:   1.      4.      8.     13.1
128:   1.      1.      9.     41.6
129:   1.      1.      9.     41.6
130:   1.      2.      9.     27.6
131:   1.      2.      9.     27.6
132:   1.      3.      9.      0.6
133:   1.      3.      9.      0.6
134:   1.      4.      9.      5.6
135:   1.      4.      9.      5.6
136:   1.      1.     10.    172.0
137:   1.      1.     10.    172.0
138:   1.      2.     10.     15.2
139:   1.      2.     10.     15.2
140:   1.      3.     10.      1.0
```

Figure III.2.7 (Cont.)

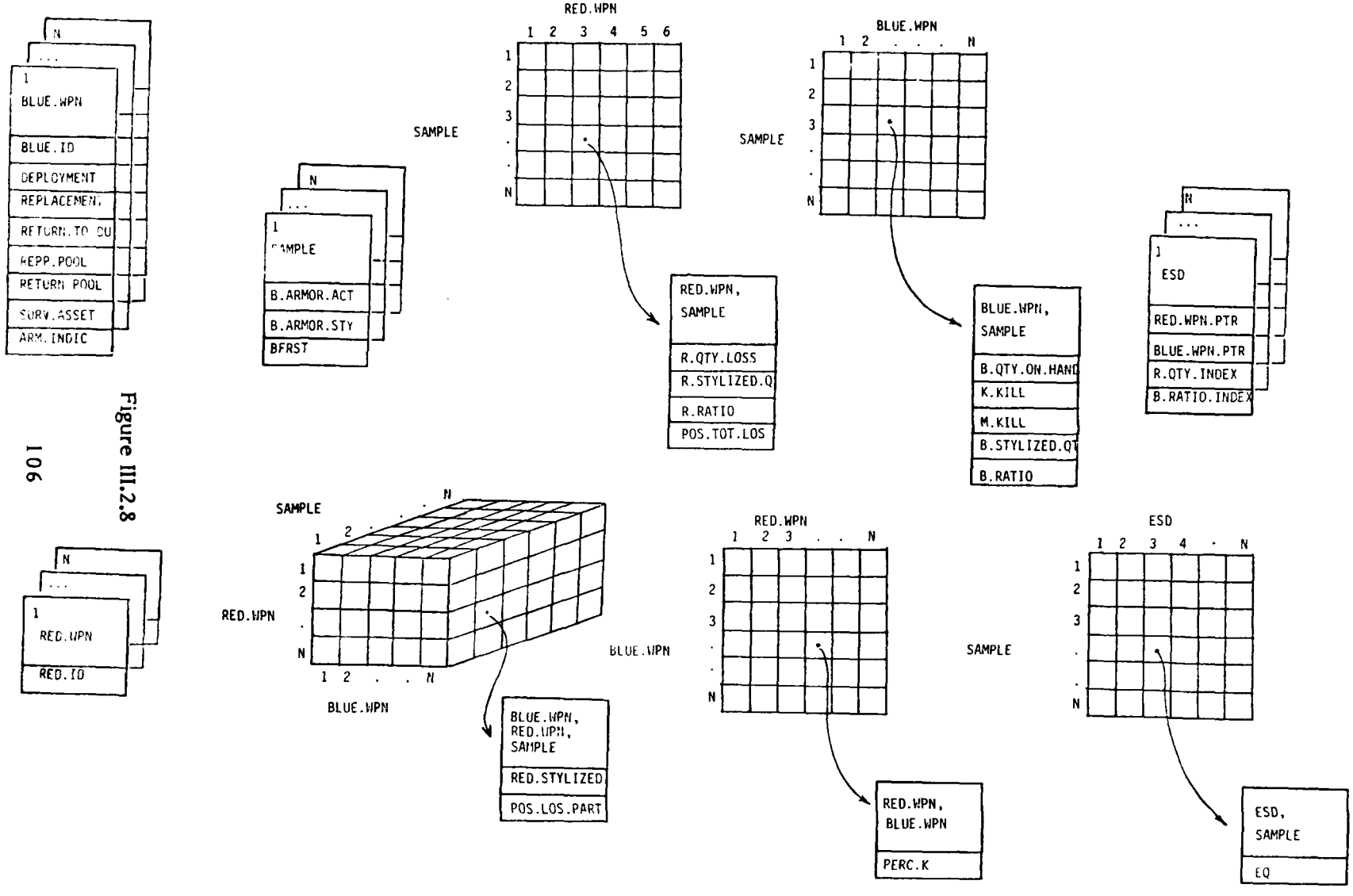


Figure III.2.8

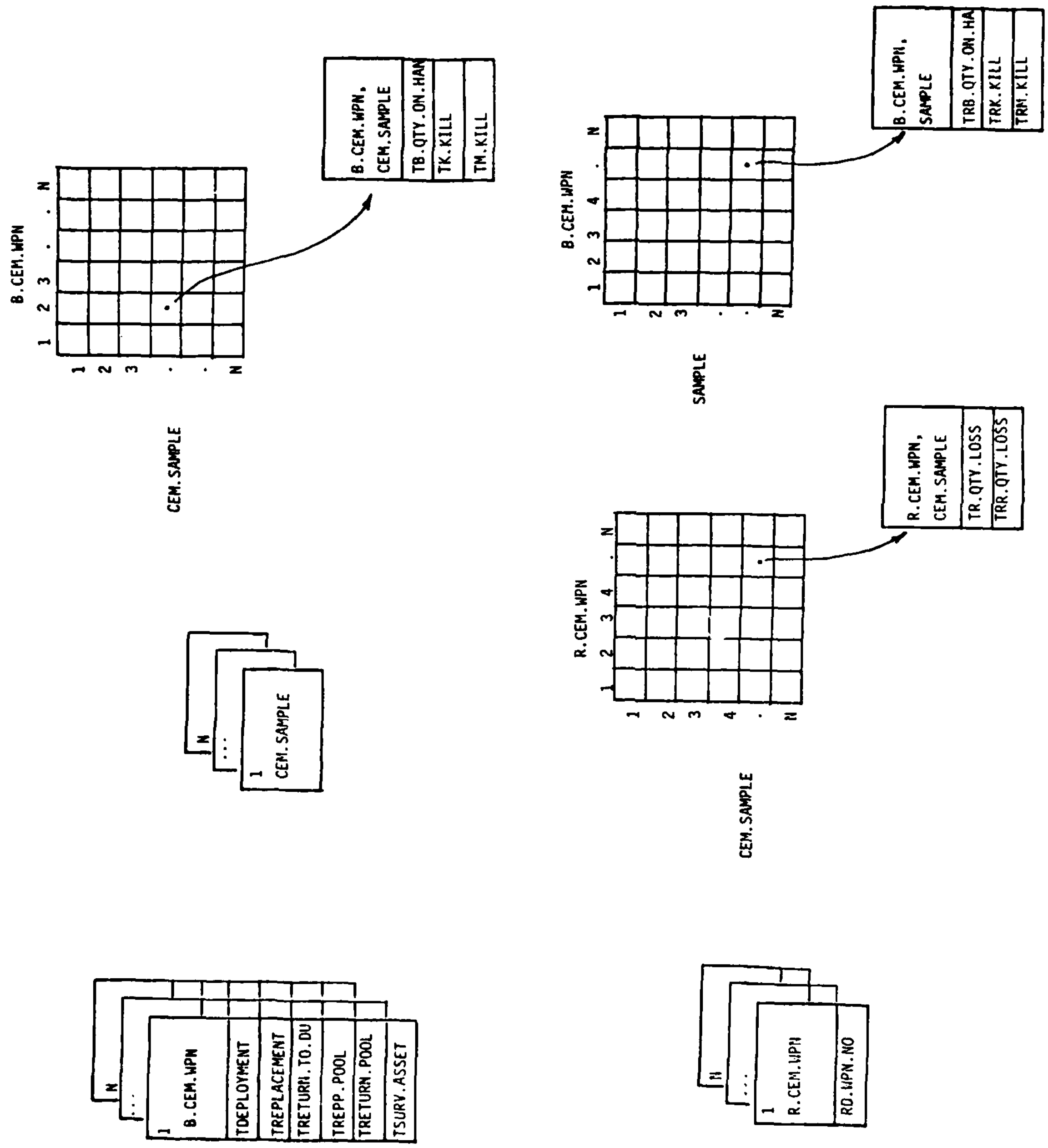


Figure III.2.9

EQUIVALENT STYLIZED DAY
HIGH LEVEL PROGRAM FEATURES

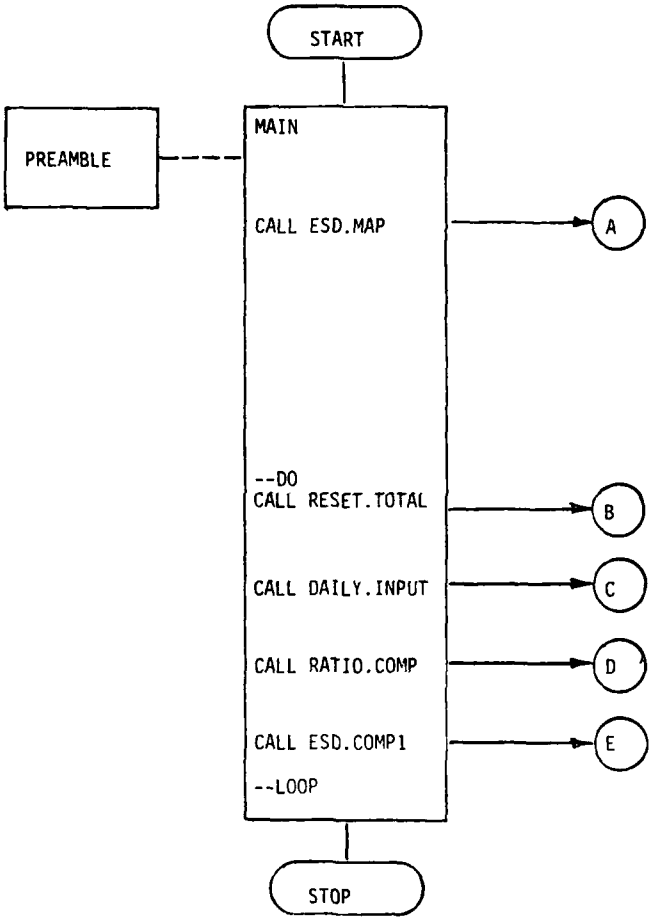


Figure III.2.10

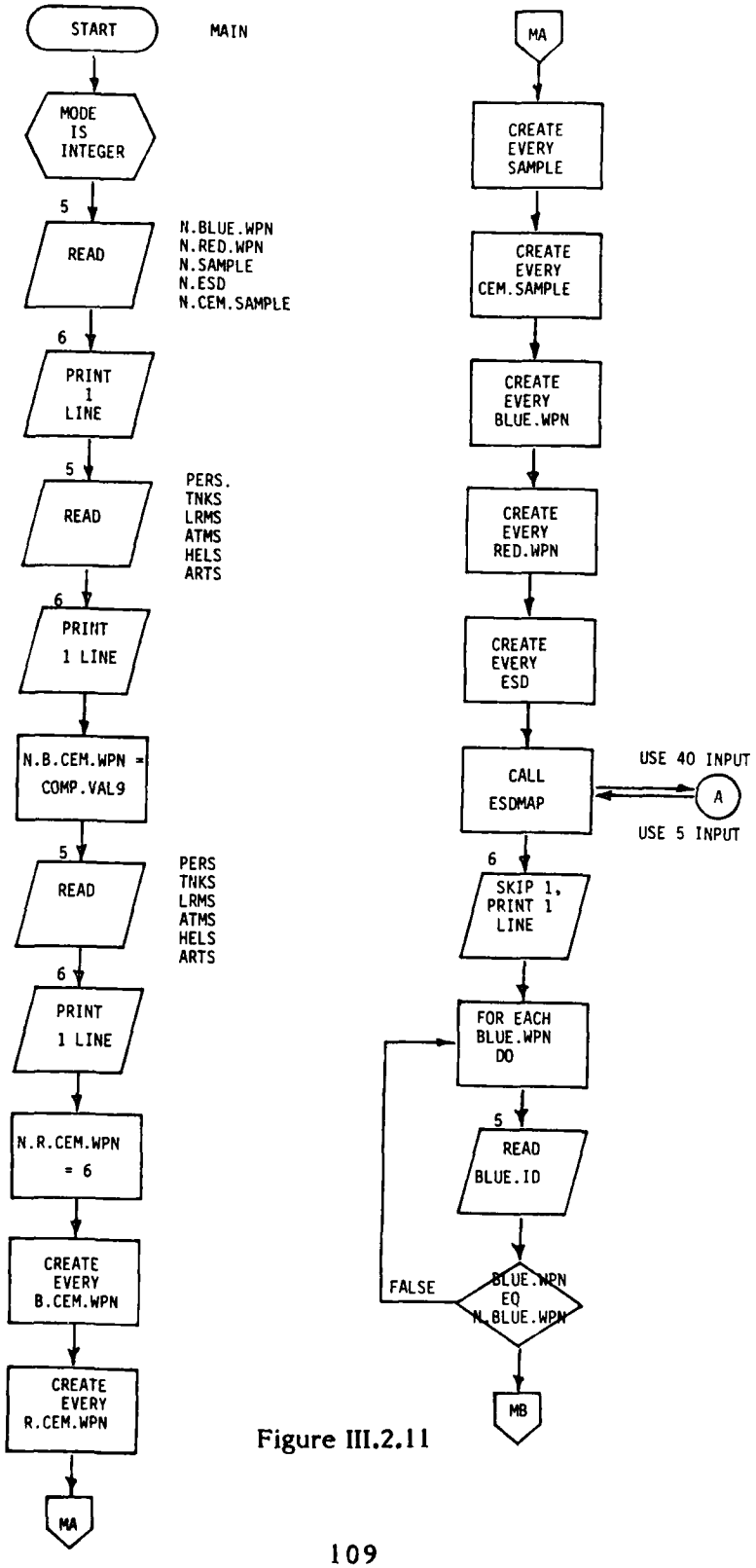


Figure III.2.11

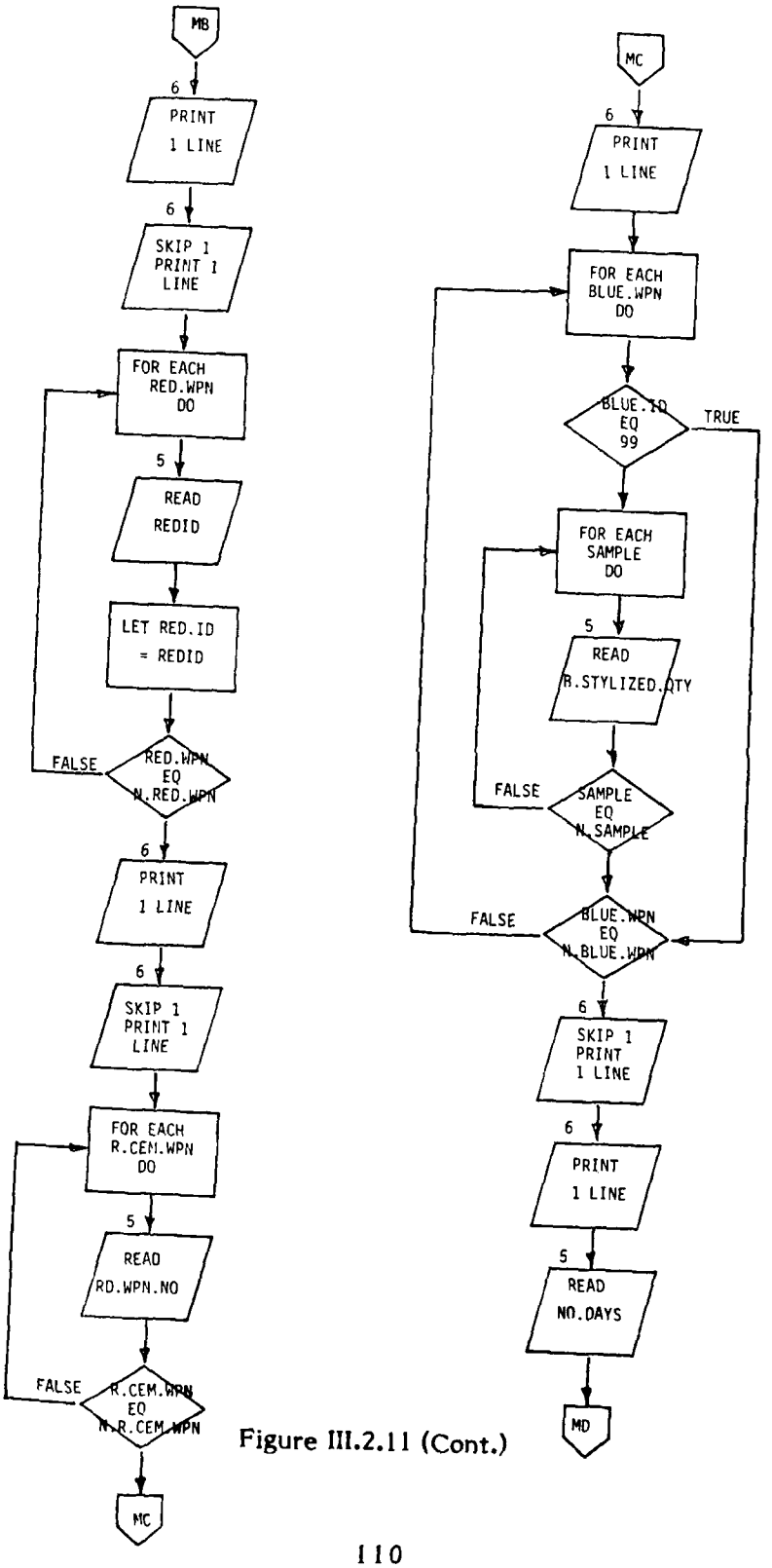


Figure III.2.11 (Cont.)

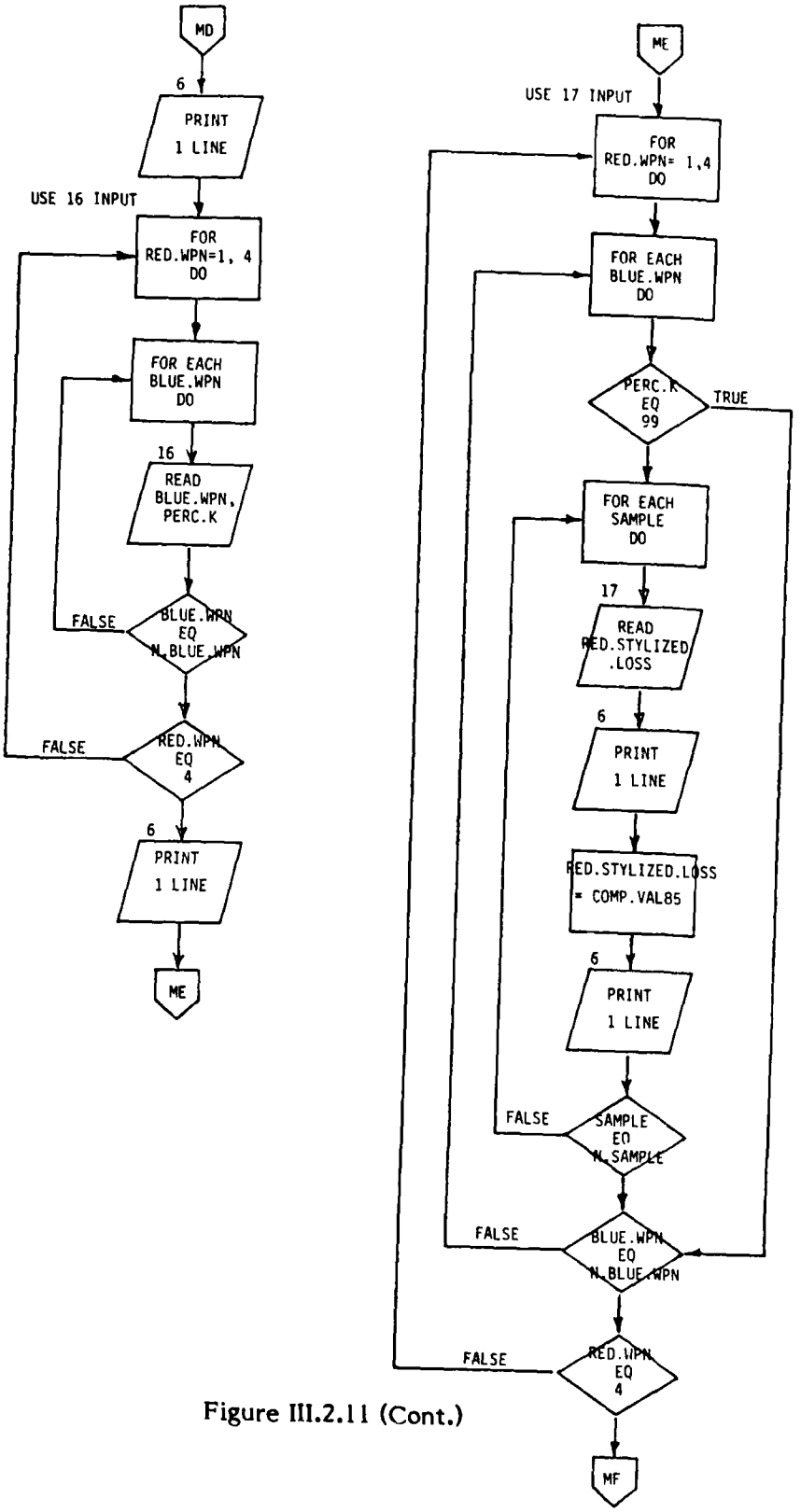


Figure III.2.11 (Cont.)

THIS PAGE IS INTENTIONALLY LEFT BLANK

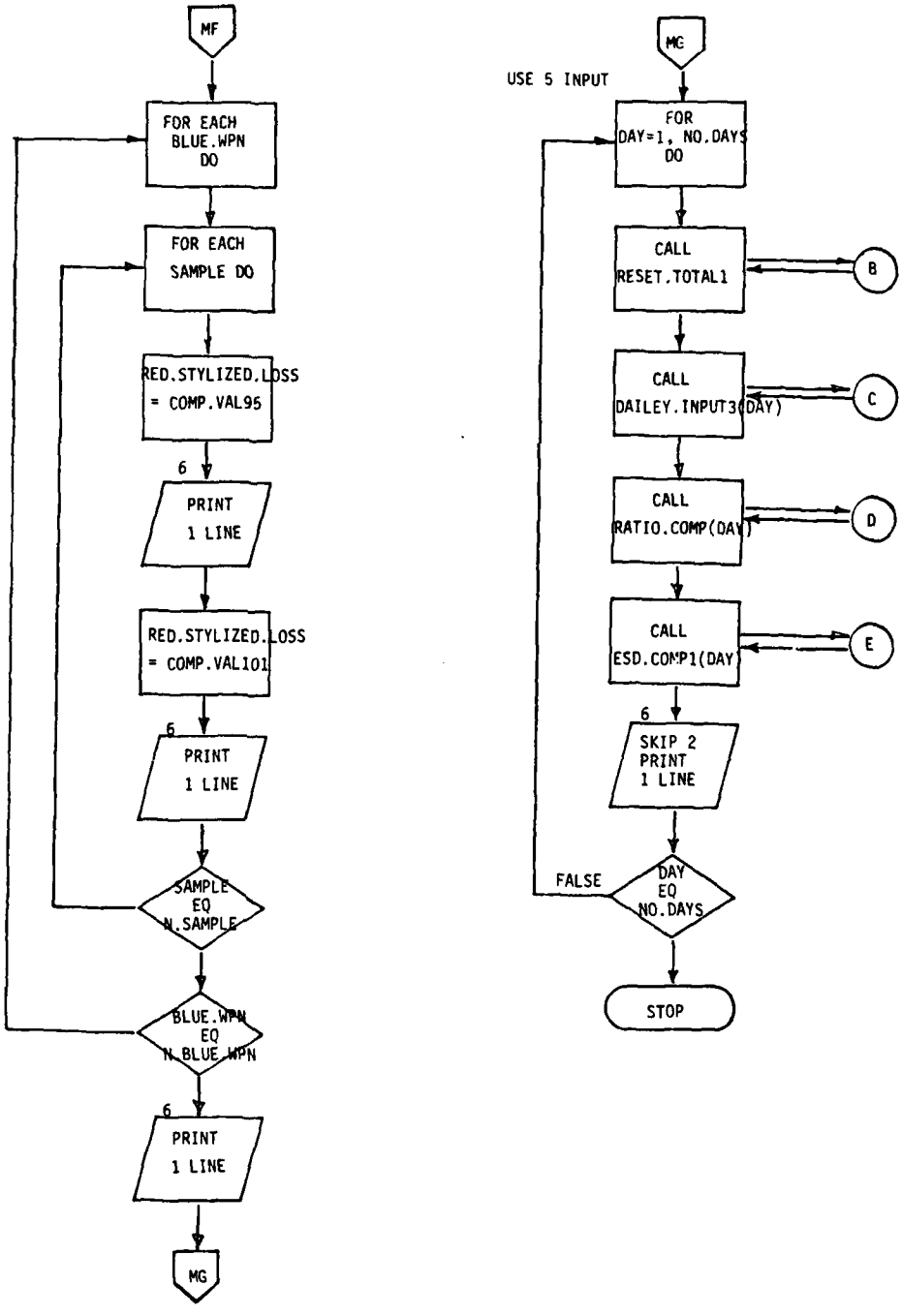


Figure III.2.11 (Cont.)

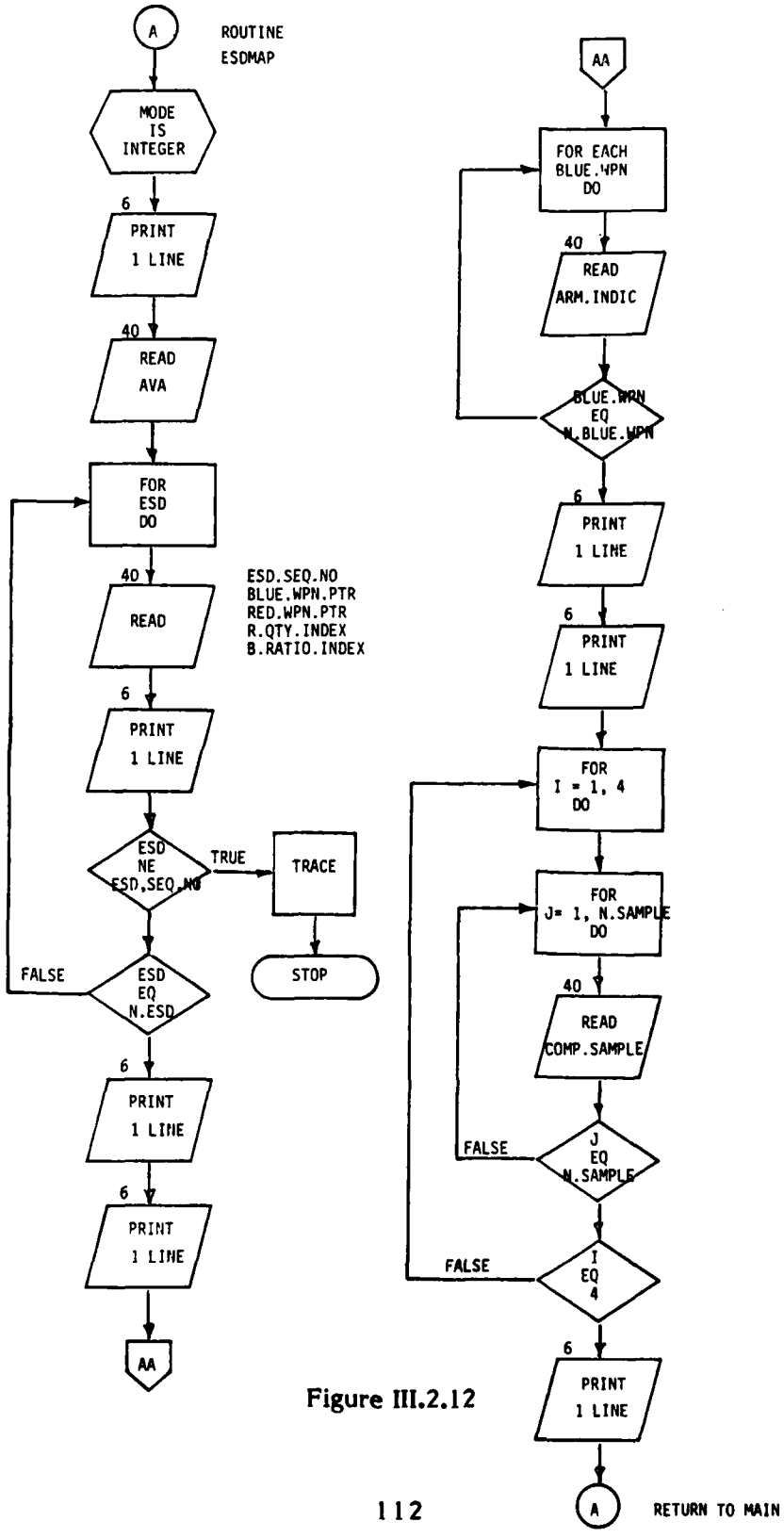


Figure III.2.12

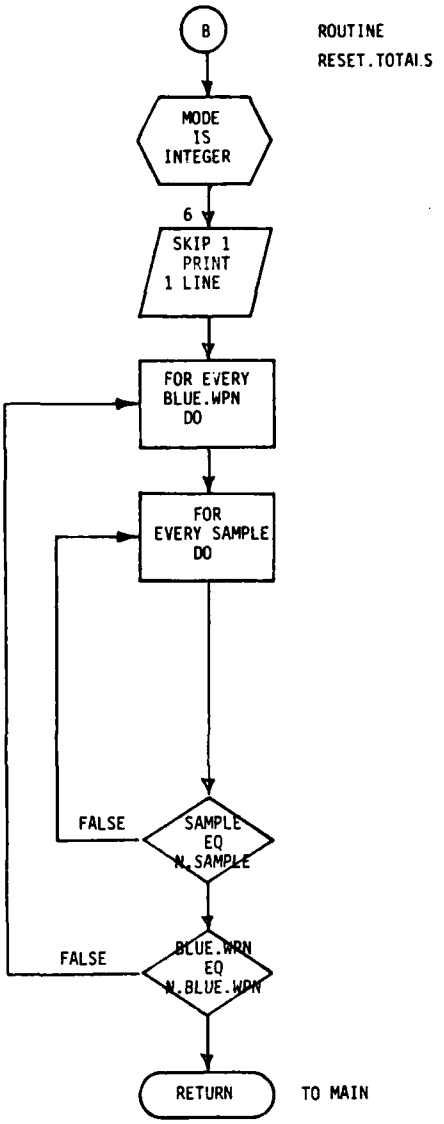


Figure III.2.13

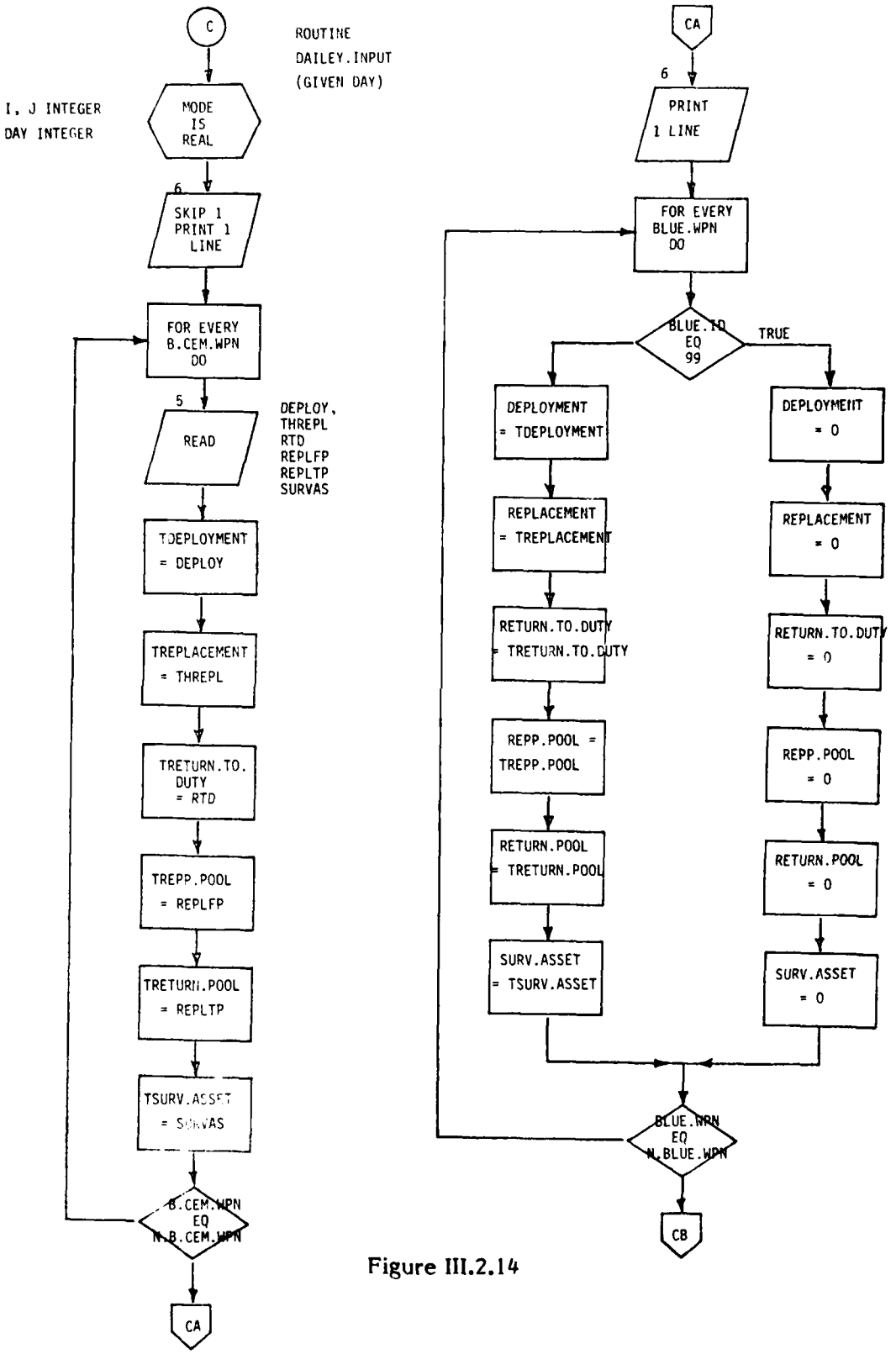


Figure III.2.14

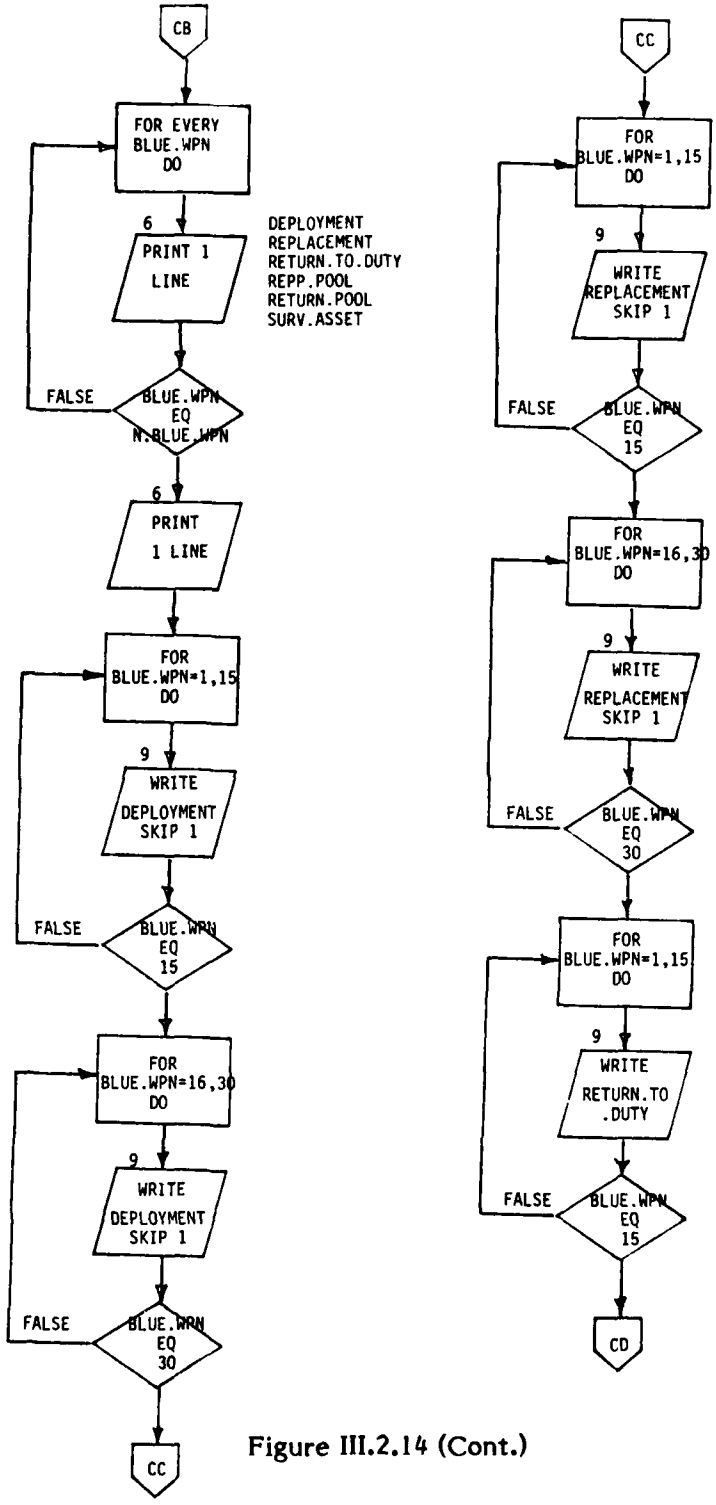


Figure III.2.14 (Cont.)

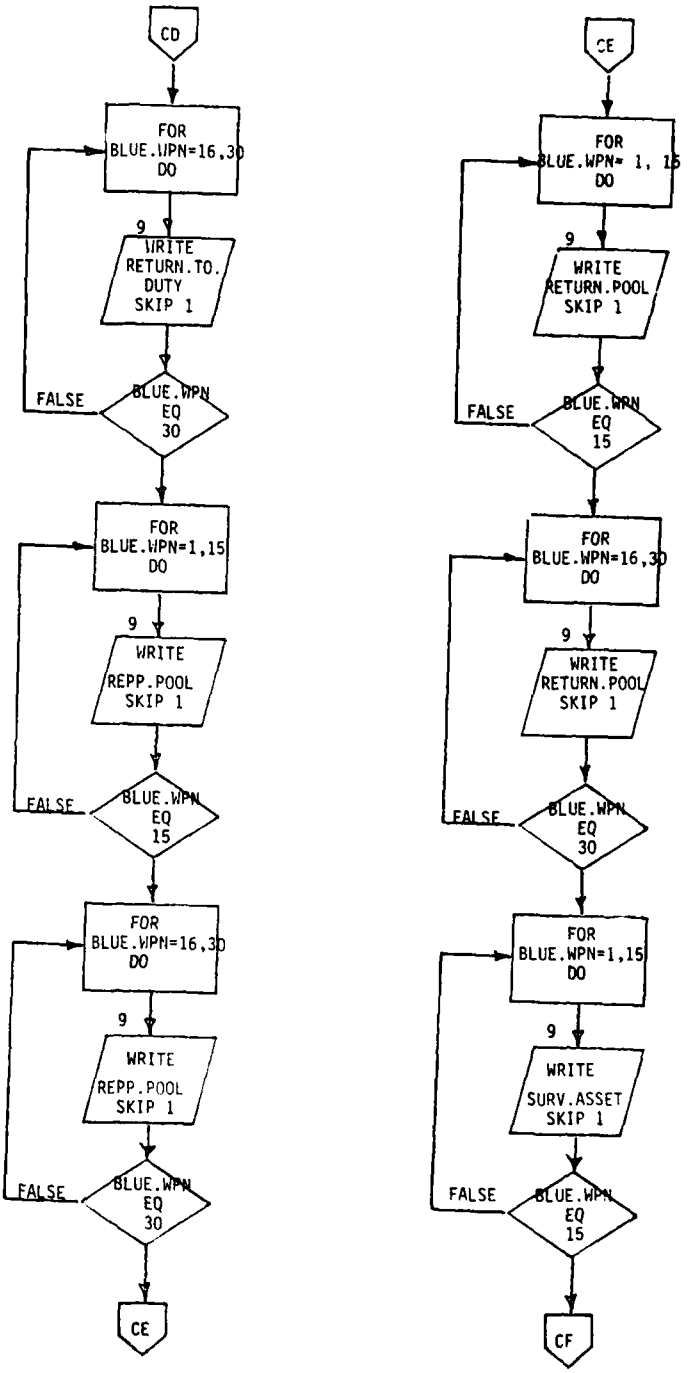


Figure III.2.14 (Cont.)

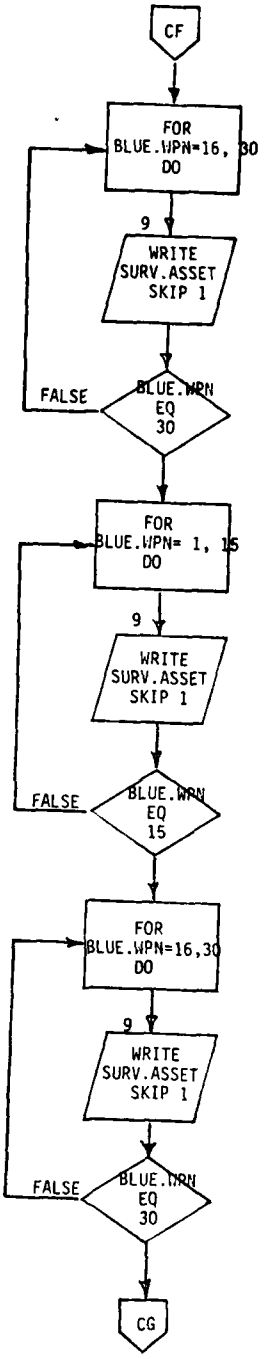


Figure III.2.14 (Cont.)

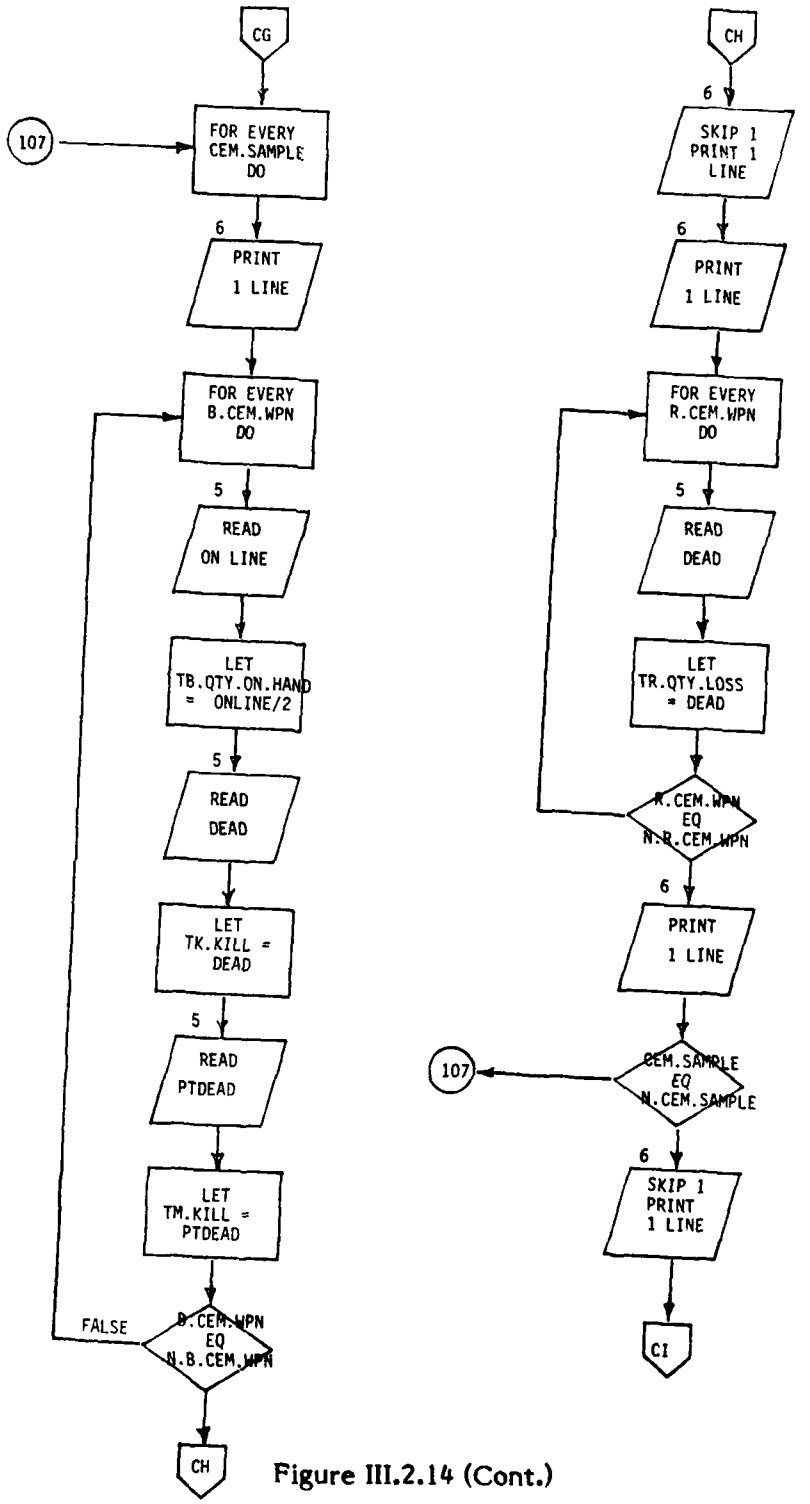


Figure III.2.14 (Cont.)

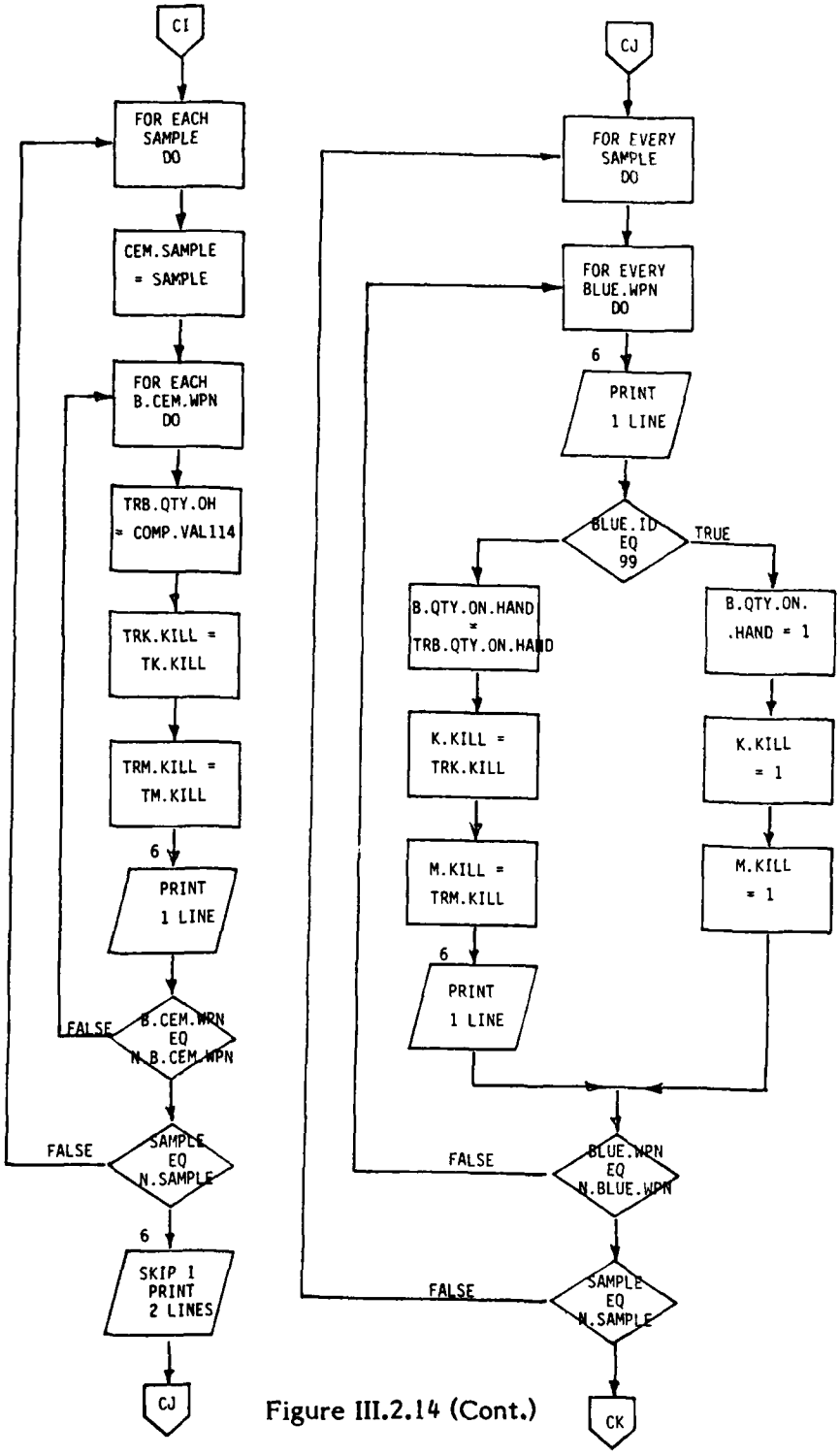


Figure III.2.14 (Cont.)

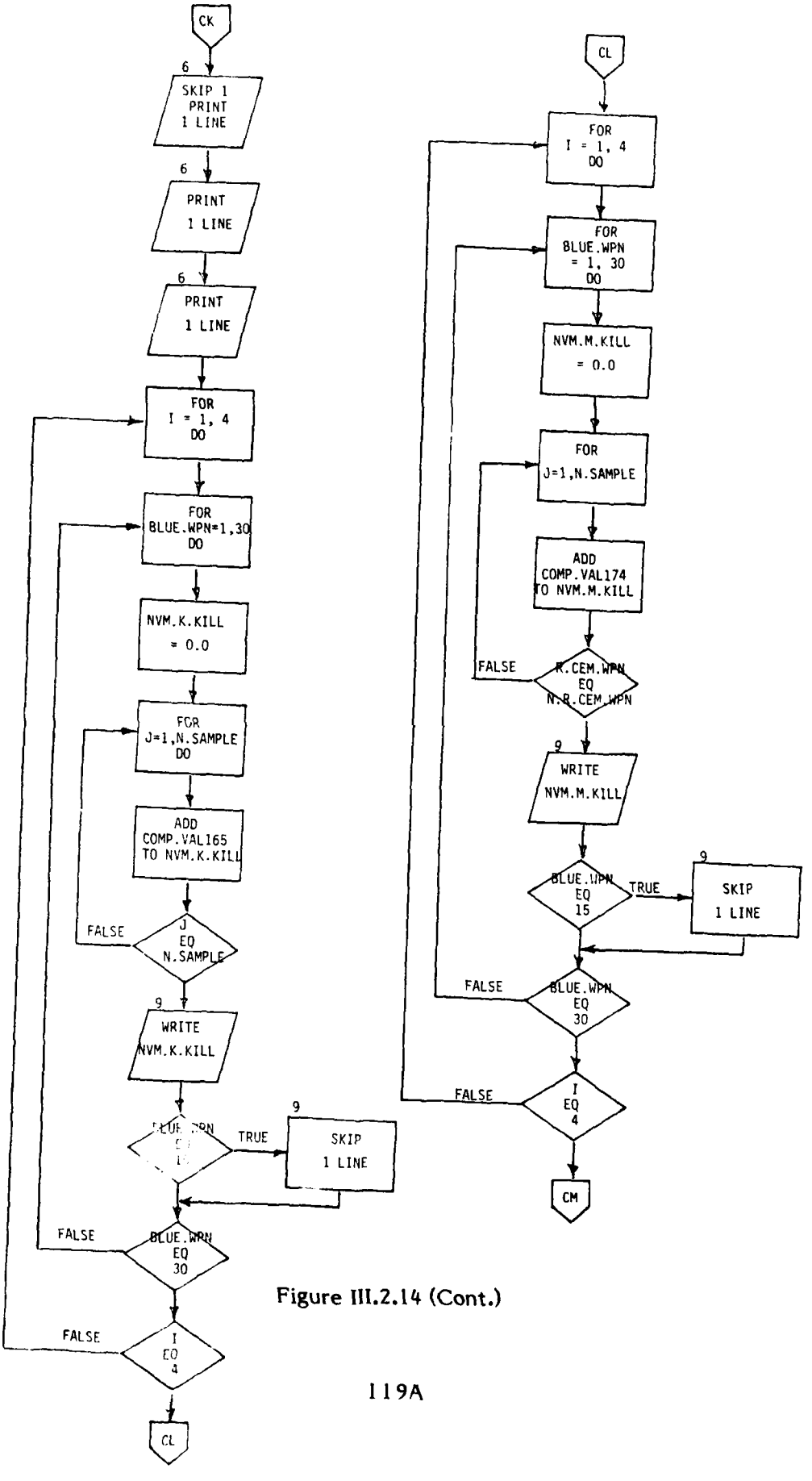


Figure III.2.14 (Cont.)

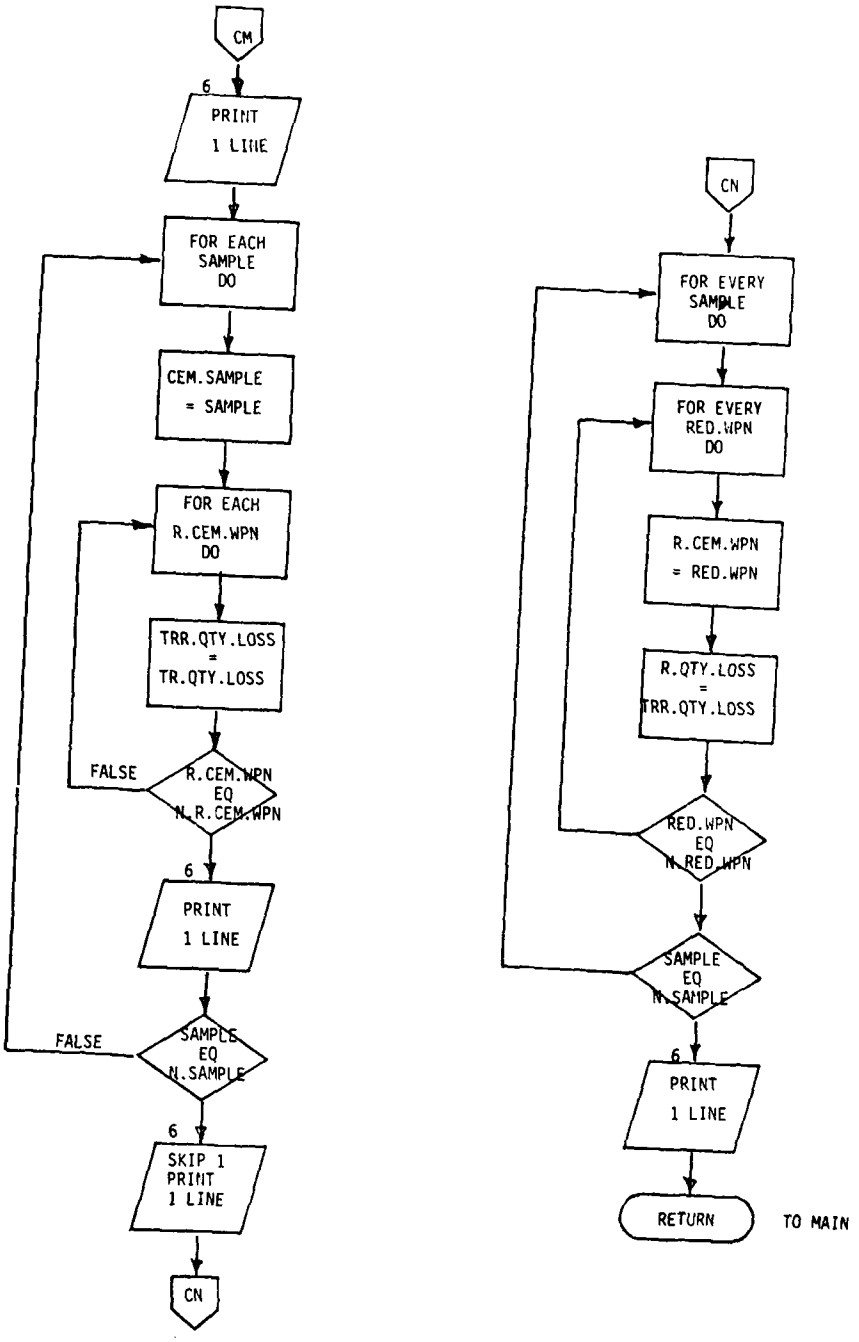


Figure III.2.14 (Cont.)

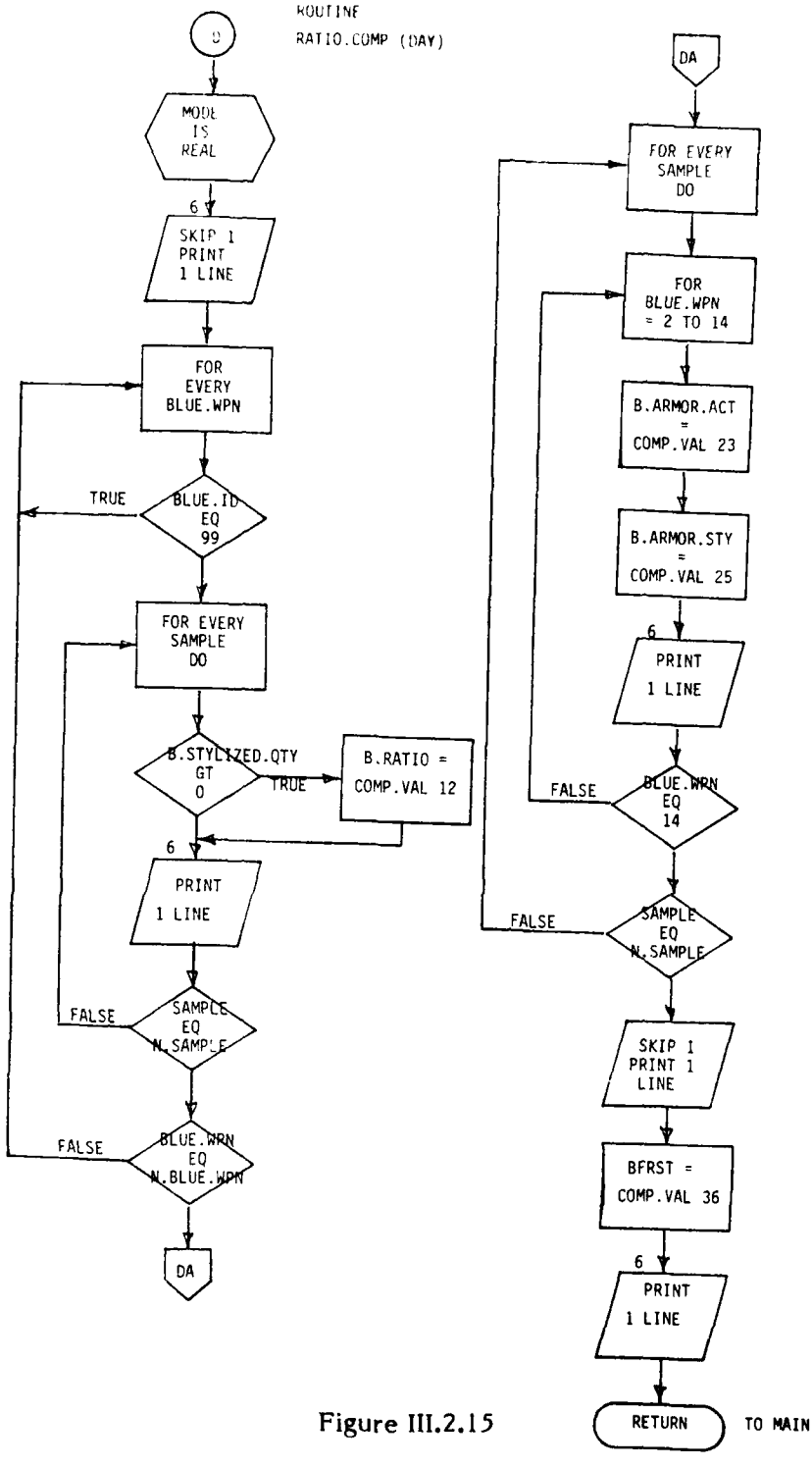


Figure III.2.15

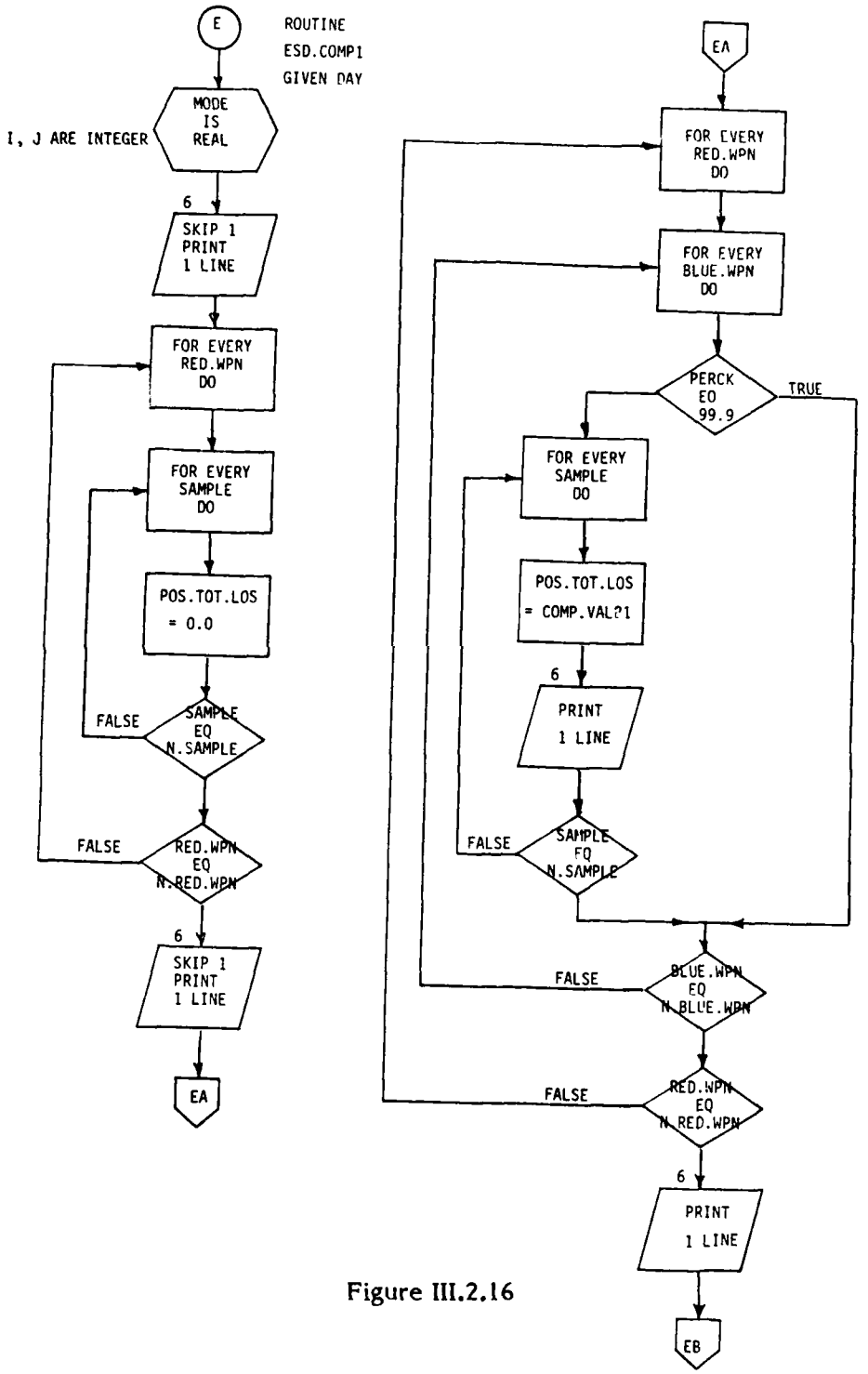


Figure III.2.16

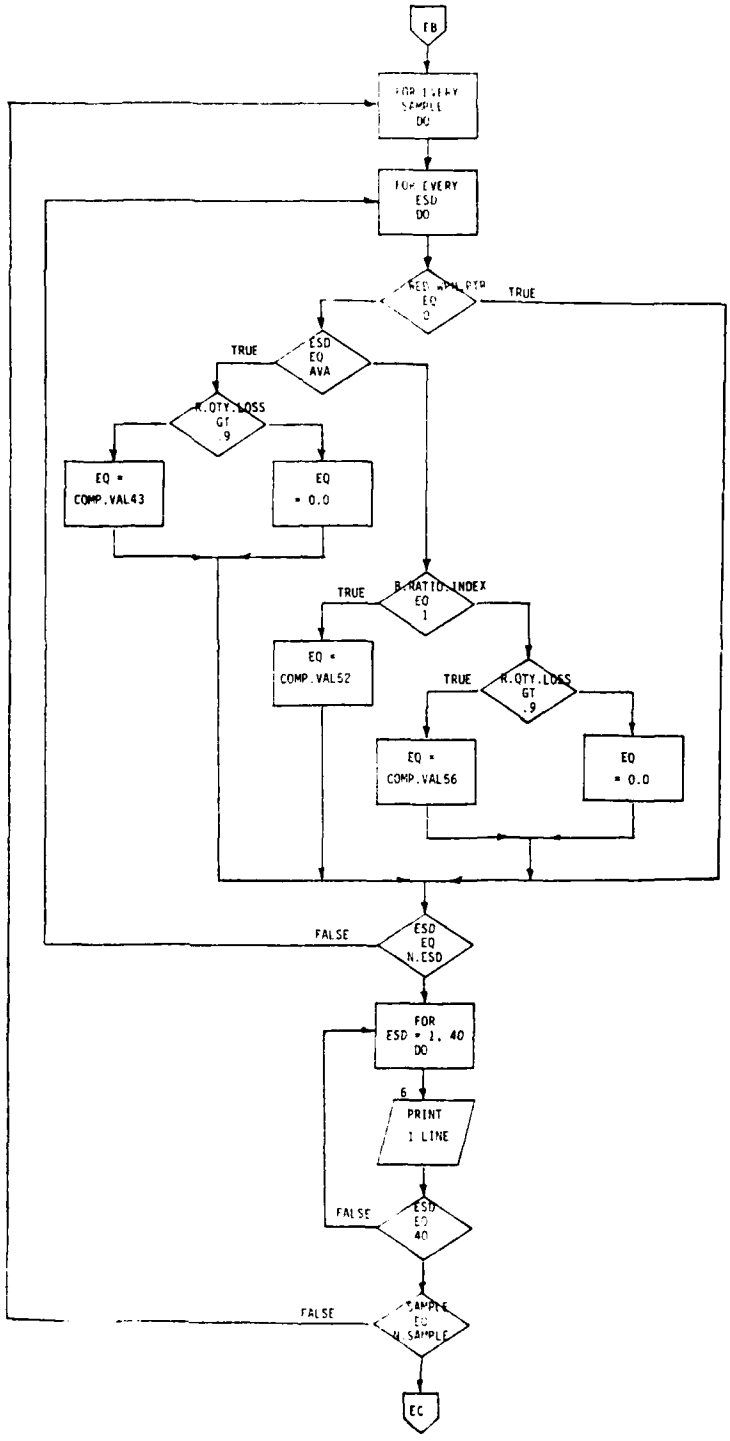


Figure III.2.16 (Cont.)

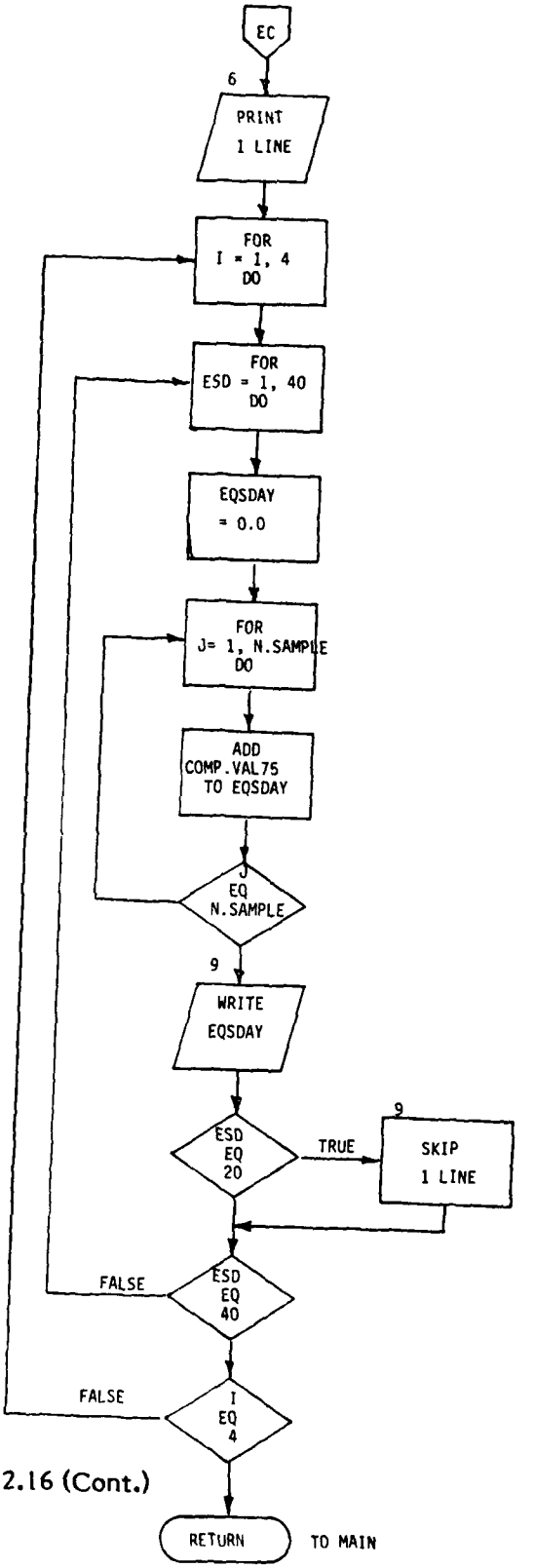


Figure III.2.16 (Cont.)

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

   1   PREAMBLE
   2   NORMALLY MODE IS REAL
   3   PERMANENT ENTITIES
   4
   5   EVERY BLUE.WPN,SAMPLE HAS
   6        A B.QTY.ON.HAND,          **REAL-ENGD. EQUIPMENT FOR EACH ASSESSMENT TODAY
   7        A K.KILL,                 **REAL-K-KILLED TODAY
   8        A M.KILL,                 **REAL-M-KILLED TODAY
   9        A B.STYLIZED.QTY,         **REAL STYLIZED # FROM COSAGE OR HL
  10        A B.RATIO                 **REAL-BLUE ACTUAL/STYLIZED QUANTITY
  11
  12   EVERY BLUE.WPN HAS
  13        A BLUE.ID,                **INTEGER-CEM #
  14        A DEPLOYMENT,             **REAL-DEPLOYED TO THEATER TDY (DEPLOY)
  15        A REPLACEMENT,            **REAL-REPLACED TO THEATER TDY (THREPL)
  16        A RETURN.TO.DUTY,         **REAL-RTD FROM LL MAINTENANCE TDY (RTD)
  17        A REPP.POOL,       **REAL-REPD.& ISSUED FROM POOL TDY (RFPLPP)
  18        A RETURN.POOL,           **REAL-RTD.TO POOL FROM HL MAINT.TDY (REPLTP)
  19        A SURV.ASSET,             **REAL-NUMBER SURVIVING TDY (SURVAS)
  20        A ARM.INDIC               **1 FOR ARMOR,0 FOR NOT ARMOR
  21
  22   EVERY B.CEM.WPN HAS
  23        A TDEPLOYMENT,             **REAL-CEM DEPLOYED TO THEATER TDY (DEPLOY)
  24        A TREPLACEMENT,            **REAL-CEM REPLACED TO THEATER TDY (THREPL)
  25        A TRETURN.TO.DUTY,         **REAL-CEM RTD FROM LL MAINTENANCE TDY (RTD)
  26        A TREPP.POOL,       **REAL-CEM REPD.& ISSUED FROM POOL TDY (RFPLPP)
  27        A TRETURN.POOL,           **REAL-CEM RTD.TO POOL FROM HL MAINT.TDY (REPLTP)
  28        A TSURV.ASSET              **REAL-CEM NUMBER SURVIVING TDY (SURVAS)
  29
  30   EVERY RED.WPN,SAMPLE HAS
  31        A R.QTY.LOSS,             **REAL-ENGD.EQUIPMENT EACH ASSESSMENT TODAY
  32        A R.STYLIZED.QTY,         ** REAL STYLIZED # FROM COSAGE OR HL
  33        A R.RATIO,                **REAL-RED ACTUAL/STYLIZED QUANTITY TODAY
  34        A POS.TOT.LOS             **REAL-POSSIBLE TOTAL RED LOSS BY ALL BLUE
  35
  36   EVERY RED.WPN HAS
  37        A RED.ID                  **INTEGER-CEM #
  38
  39   EVERY RED.WPN,BLUE.WPN  HAS
  40        A PERC.K                  **REAL-PERCENT K-KILL
  41
  42   EVERY RED.WPN,BLUE.WPN,SAMPLE HAS
  43        A RED.STYLIZED.LOS,       **REAL-STYLIZED QUANTITY-COSAGE
  44        A POS.LOS.PART            **REAL-RED LOSS TO PARTICULR BLUE
  45
  46   EVERY B.CEM.WPN,CEM.SAMPLE HAS
  47        A TB.QTY.ON.HAND,         **REAL-CEM INPUT TDY
  48        A TK.KILL,                **REAL-CEM INPUT TDY
  49        A TM.KILL                 **REAL-CEM INPUT TDY
  50
  51   EVERY B.CEM.W  ,SAMPLE HAS
  52        A TRB  TY. N.HAND,         **REAL-CEM MA  ON TR SAMPLE TDY
```

Figure III.2.17

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

  53       A TRK.KILL,                **REAL-CEM MAP ON TR SAMPLE TDY
  54       A TRM.KILL                 **REAL-CEM MAP ON TR SAMPLE TDY
  55
  56   EVERY R.CEM.WPN,CEM.SAMPLE HAS
  57       A TR.QTY.LOSS              **REAL CEM INPUT TDY
  58
  59   EVERY R.CEM.WPN,CEM.SAMPLE HAS
  60       A TRR.QTY.LOSS             **REAL-CEM MAP ON TR SAMPLE TDY
  61
  62   EVERY R.CEM.WPN HAS
  63       A PD.WPN.NO                **MAPPING COEFFICIENT
  64
  65   EVERY SAMPLE HAS
  66       A B.ARMOR.ACT,       **REAL- SUMMATION ACTUAL BLUE ARMOR
  67       A B.ARMOR.STY,       **REAL- SUMMATION STYLIZED BLUE ARMOR
  68       A BERST              **REAL-BLUE ARMOR RATIO
  69
  70   EVERY ESD HAS
  71       A RED.WPN.PTR,       **INTEGER-RED WPN IN THE ESD
  72       A BLUE.WPN.PTR,      **INTEGER-BLUE WPN IN THE ESD
  73       A P.QTY.INDEX,       **INTEGER
  74       A B.RATIO.INDEX      **INTER (0,1) WHERE 0 = NORMAL COMPUTATION
  75                            **                  1 = B.RATIO FOR ESD VALUE
  76
  77   EVERY ESD,SAMPLE HAS
  78       A EQ                 **REAL EQUIV. STY. DAY
  79
  80   TEMPORARY ENTITIES
  81
  82
  83   DEFINE ASSESS AS A REAL FUNCTION WITH 3 ARGUMENTS
  84
  85   DEFINE **INTEGER VARIABLES
  86       BLUE.ID,
  87       RED.ID,
  88       RED.WPN.PTR,
  89       BLUE.WPN.PTR,
  90       AVA,
  91       P.RATIO.INDEX,
  92       ARM.INDIC
  93   AS INTEGER VARIABLES
  94
  95   DEFINE COMB.SAMPLE AS A 2-DIMENSIONAL ARRAY
  96
  97   **SDDL SUBSTITUTIONS
  98   DEFINE ENDPREAMBLE1 TO MEAN END
  99   DEFINE ENDMAIN TO MEAN END
 100   DEFINE EXITMAIN TO MEAN STOP
 101   DEFINE ENDROUTINE TO MEAN END
 102   DEFINE EXITROUTINE TO MEAN RETURN
 103   DEFINE ENDFUNCTION TO MEAN END
 104   DEFINE EXITFUNCTION TO MEAN RETURN
 105   DEFINE LEFTROUTINE TO MEAN LEFT ROUTINE
 106   DEFINE ENDLEFTROUTINE TO MEAN END
 107   DEFINE EXITLEFTROUTINE TO MEAN RETURN
 108   DEFINE ENDEVENT TO MEAN END
 109   DEFINE EXITEVENT TO MEAN RETURN
 110   DEFINE ENDPROCESS TO MEAN END
 111   DEFINE EXITPROCESS TO MEAN RETURN
 112   DEFINE ELSEIF TO MEAN ELSE IF
 113   DEFINE ENDIF TO MEAN ALWAYS
 114   DEFINE ENDLOOP TO MEAN REPEAT
 115   DEFINE EXITLOOP TO MEAN LEAVE
 116   DEFINE LOOP TO MEAN RESUME SUBSTITUTION
 117
 118   ENDPREAMBLE1
```

Figure III.2.17 (Cont.)

```
LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

    1  MAIN
    2  NORMALLY MODE IS INTEGER
    3  READ N.BLUE.WPN,N.RED.WPN,N.SAMPLE,N.ESD,N.CEM.SAMPLE
    4   PRINT 1 LINE WITH N.BLUE.WPN,N.RED.WPN,N.SAMPLE,N.ESD,N.CEM.SAMPLE THUS
 *** BLUE WPNS   *** RED WPNS   ** SAMPLES  *** ESD ** N.CEM.SAMPLE
    6  READ PERS,TNKS,LRMS,ATMS,HELS,ARTS
    7  PRINT 1 LINE WITH PERS,TNKS,LRMS,ATMS,HELS,ARTS THUS
 ***  ***  ***  ***  ***  ***
    9  LET N.B.CEM.WPN=PERS+TNKS+LRMS+ATMS+HELS+ARTS
   10  READ PERS,TNKS,LRMS,ATMS,HELS,ARTS
   11  PRINT 1 LINE WITH PERS,TNKS,LRMS,ATMS,HELS,ARTS THUS
 ***  ***  ***  ***  ***  ***
   13  LET N.R.CEM.WPN=6
   14  CREATE EVERY B.CEM.WPN
   15  CREATE EVERY R.CEM.WPN
   16  CREATE EVERY SAMPLE
   17  CREATE EVERY CEM.SAMPLE
   18  CREATE EVERY BLUE.WPN
   19  CREATE EVERY RED.WPN
   20  CREATE EVERY ESD
   21  SKIP 1 LINE
   22  USE 40 FOR INPUT
   23  CALL ESDMAP
   24  USE 5 FOR INPUT
   25  SKIP 1 LINE
   26  PRINT 1 LINE THUS
 /READING MAPPING OF SELECTED BLCMAM WEAPONS/
   28  LOOP FOR EACH BLUE.WPN DO
   29       READ BLUE.ID(BLUE.WPN)
   30  ENDLOOP
   31  PRINT 1 LINE WITH BLUE.ID(30)THUS
LAST VALUE READ BLUE.ID(BLUE.WPN) WAS ****.*
   33  SKIP 1 LINE
   34  PRINT 1 LINE THUS
 /READING MAPPING OF SELECTED RDCMAM WEAPONS/
   36  LOOP FOR EACH RED.WPN DO
   37       READ REDID
   38       LET RED.ID(RED.WPN) = REDID
   39  ENDLOOP
   40  PRINT 1 LINE WITH RED.ID(6)THUS
LAST VALUE READ RED.ID(RED.WPN) WAS ****.*
   42  SKIP 1 LINE
   43  PRINT 1 LINE THUS
 /READING MAPPING OF RDAMCH WPNS/
   45  LOOP FOR EVERY R.CEM.WPN DO
   46       READ RD.WPN.NO(R.CEM.WPN)
   47  ENDLOOP
   48  PRINT 1 LINE WITH RD.WPN.NO(6) THUS
LAST VALUE READ RD.WPN.NO(6) WAS ****.*
   50  LOOP FOR EACH BLUE.WPN DO
   51       IF BLUE.ID(BLUE.WPN) = 99
   52       CYCLE
```

Figure III.2.18

```
 LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

   53       ENDIF
   54       LOOP FOR EACH SAMPLE DO
   55         READ B.STYLIZED.QTY(BLUE.WPN,SAMPLE)
   56       ENDLOOP
   57   ENDLOOP
   58   SKIP 1 LINE
   59   PRINT 1 LINE THUS
 /STYLIZED QUANTITIES READ FOR BLUE WEAPONS AND SAMPLES/
   61   PRINT 1 LINE WITH B.STYLIZED.QTY(30,4) THUS
LAST VALUE READ B.STYLIZED .QTY(BLUE.WPN,SAMPLE) WAS ****.*
   63   READ NO.DAYS
   64   PRINT 1 LINE WITH NO.DAYS THUS
/NUMBER OF DAYS ARE ****
   66   USE 16 FOR INPUT
   67   LOOP FOR RED.WPN = 1 TO 4 DO
   68     LOOP FOR EACH BLUE.WPN DO
   69       READ BLUE.WPN,PERC.K(RED.WPN,BLUE.WPN)
   70     ENDLOOP
   71   ENDLOOP
   72   PRINT 1 LINE WITH PERC.K (4,30) THUS
/PERCENT K-KILL FOR RED.WPN 1 TO 4 & BLUE KILLERS READ,LAST WAS***.*
   74   USE 17 FOR INPUT
   75   LOOP FOR RED.WPN  = 1 TO 4 DO
   76     LOOP FOR EACH BLUE.WPN DO
   77     IF PERC.K(RED.WPN,BLUE.WPN) = 99.9
   78     CYCLE
   79     ENDIF
   80       LOOP FOR EACH SAMPLE DO
   81         READ RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE)
   82       PRINT 1 LINE WITH RED.WPN,SAMPLE,BLUE.WPN
   83       ,RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE) THUS
 ***.*    ***.*   ***.*   ***.*
   85         LET RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE)
   86           =  RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE)
   87       PRINT 1 LINE WITH RED.WPN,SAMPLE,BLUE.WPN
   88       ,RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE) THUS
 ***.*    ***.*   ***.*   ***.*
   90       ENDLOOP
   91     ENDLOOP
   92   ENDLOOP
   93   LOOP FOR EACH BLUE..PN DO
   94     LOOP FOR EACH SAMPLE DO
   95     LET RED.STYLIZED.LOS(5,BLUE.WPN,SAMPLE)
   96       = RED.STYLIZED.LOS(3,BLUE.WPN,SAMPLE)
   97           *RED.STYLIZED.LOS(4,BLUE.WPN,SAMPLE)
   98   PRINT 1 LINE WITH BLUE.WPN,SAMPLE
   99      ,RED.STYLIZED.LOS(5,BLUE.WPN,SAMPLE) THUS
     ***.* ***.* ***.*
  101     LET RED.STYLIZED.LOS(6,BLUE.WPN,SAMPLE)
  102       = RED.STYLIZED.LOS(2,BLUE.WPN,SAMPLE)
  103           *RED.STYLIZED.LOS(5,BLUE.WPN,SAMPLE)
  104   PRINT 1 LINE WITH BLUE.WPN,SAMPLE
```

Figure III.2.18 (Cont.)

```
 LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

  105      ,RED.STYLIZED.LOS(6,BLUE.WPN,SAMPLE) THUS
     ***.* ***.* ***.*
  107   ENDLOOP
  108  ENDLOOP
  109  PRINT 1 LINE THUS
/LAST VALUE RED.STYLIZED.LOS COMPUTED
  111  USE 5 FOR INPUT
  112  LOOP FOR DAY=1 TO NO.DAYS DO
  113       CALL RESET.TOTAL1
  114       CALL DAILY.INPUT3(DAY)
  115       CALL RATIO.COMP(DAY)
  116       CALL ESD.COMP1(DAY)
  117       SKIP 2 LINES
  118       PRINT 1 LINE WITH DAY THUS
    INPUT READ AND  ORDERED,  RATIOS AND ESDS CALC.  FOR DAY ***
  120  ENDLOOP
  121  ENDMAIN
```

Figure III.2.18 (Cont.)

```
 LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

    1   ROUTINE ESDMAP
    2   **
    3   **
    4   **THIS ROUTINE READS A DATA FILE THAT DEFINES THE WPN EQUIPMENT
    5   **COMBINATIONS THAT DEFINE THE ESD'S
    6   **
    7   **
    8   NORMALLY MODE IS INTEGER
    9   PRINT 1 LINE THUS
/READ IN THE ESD MAP DATA/
   11   READ AVA
   12   FOR EACH ESD, DO
   13      READ ESD.SEQ.NO, BLUE.WPN.PTR(ESD), RED.WPN.PTR(ESD), R.QTY.INDEX(ESD),
   14        B.RATIO.INDEX(ESD)
   15      PRINT 1 LINE WITH ESD, ESD.SEQ.NO, RED.WPN.PTR(ESD),
   16         BLUE.WPN.PTR(ESD), B.RATIO.INDEX(ESD) THUS
ESD = ***  ESD.SEQ.NO = ***  RED.WPN = ***  BLUE.WPN = *** B.RATIO.INDEX = *
   18      IF ESD NE ESD.SEQ.NO
   19         TRACE
   20         STOP
   21      OTHERWISE
   22   ENDLOOP
   23   PRINT 1 LINE THUS
/ESD MAP DATA READ IN/
   25   PRINT 1 LINE THUS
/READ IN ARMOR INDICATORS/
   27   FOR EACH BLUE.WPN
   28      READ ARM.INDIC(BLUE.WPN)
   29   PRINT 1 LINE THUS
/ARMOR INDICATORS READ IN/
   31   PRINT 1 LINE THUS
/READ IN COFFFICIENTS FOR COMBINING SAMPLES/
   33   FOR I = 1 TO 4, FOR J = 1 TO N.SAMPLE
   34      READ COMB.SAMPLE(I,J)
   35   PRINT 1 LINE THUS
/COEFFICIENTS FOR COMBINING SAMPLES READ IN/
   37   ENDROUTINE
```

Figure III.2.19

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

   1   ROUTINE  RESET.TOTALS
   2   NORMALLY MODE IS INTEGER
   3   SKIP 1 LINE
   4   PRINT 1 LINE THUS
////ENTERING RESET.TOTAL1////
   6   LOOP FOR EVERY BLUE.WPN DO
   7   LOOP FOR EVERY SAMPLE DO
   8   ENDLOOP
   9   ENDLOOP
  10   RETURN
  11   ENDROUTINE
```

Figure III.2.20

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

   1   ROUTINE DAILY.INPUT(DAY)
   2   NORMALLY MODE IS REAL
   3   DEFINE I AND J AS INTEGER VARIABLES
   4   DEFINE DAY AS INTEGER VARIABLE
   5   SKIP 1 LINE
   6   PRINT 1 LINE THUS
////ENTERING DAILY$INPUT3////
   8   SKIP 1 LINE
   9       LOOP FOR EVERY B.CEM.WPN DO
  10       READ DEPLOY,
  11        THREPL,
  12        RTD,
  13        REPLFP,
  14        REPLTP,
  15   SURVAS
  16       LET TDEPLOYMENT(B.CEM.WPN) = DEPLOY
  17       LET TREPLACEMENT(B.CEM.WPN) = THREPL
  18       LET TRETURN.TO.DUTY(B.CEM.WPN) = RTD
  19       LET TREPP.POOL(B.CEM.WPN) = REPLFP
  20       LET TRETURN.POOL(B.CEM.WPN) = REPLTP
  21       LET TSURV.ASSET(B.CEM.WPN) = SURVAS
  22   ENDLOOP
  23   PRINT 1 LINE WITH SURVAS THUS
/CEM WEAPON DATA READ LAST VALUE WAS ******.*
  25   LOOP FOR EVERY BLUE.WPN DO
  26   IF BLUE.ID(BLUE.WPN) = 99
  27      LET DEPLOYMENT(BLUE.WPN)= 0
  28      LET REPLACEMENT(BLUE.WPN)= 0
  29      LET RETURN.TO.DUTY(BLUE.WPN)= 0
  30      LET REPP.POOL(BLUE.WPN)= 0
  31      LET RETURN.POOL(BLUE.WPN)= 0
  32      LET SURV.ASSET(BLUE.WPN)= 0
  33   CYCLE
  34   ENDIF
  35     LET DEPLOYMENT(BLUE.WPN)= TDEPLOYMENT(BLUE.ID(BLUE.WPN))
  36     LET REPLACEMENT(BLUE.WPN)= TREPLACEMENT(BLUE.ID(BLUE.WPN))
  37     LET RETURN.TO.DUTY(BLUE.WPN)= TRETURN.TO.DUTY(BLUE.ID(BLUE.WPN))
  38     LET REPP.POOL(BLUE.WPN)= TREPP.POOL(BLUE.ID(BLUE.WPN))
  39     LET RETURN.POOL(BLUE.WPN)= TRETURN.POOL(BLUE.ID(BLUE.WPN))
  40     LET SURV.ASSET(BLUE.WPN)= TSURV.ASSET(BLUE.ID(BLUE.WPN))
  41   ENDLOOP
  42   LOOP FOR EVERY BLUE.WPN DO
  43       PRINT 1 LINE WITH DEPLOYMENT(BLUE.WPN),
  44            REPLACEMENT(BLUE.WPN),
  45            RETURN.TO.DUTY(BLUE.WPN),
  46            REPP.POOL(BLUE.WPN),
  47            RETURN.POOL(BLUE.WPN),
  48            SURV.ASSET(BLUE.WPN)
  49       THUS
   ******.* ******.* ******.* ******.* ******.* ******.*
  51   ENDLOOP
  52   SKIP 1 LINE
```

Figure III.2.21

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

  53   PRINT 1 LINE WITH DAY THUS
/ORDERED CEM TO AMMO ZEROING DATA COMPLETED FOR DAY ***
  55   USE 9 FOR OUTPUT
  56        FOR BLUE.WPN=1 TO 15, WRITE DEPLOYMENT(BLUE.WPN)
  57              AS D(8,1) SKIP 1 LINE
  58        FOR BLUE.WPN=16 TO 30, WRITE DEPLOYMENT(BLUE.WPN)
  59              AS D(8,1) SKIP 1 LINE
  60        FOR BLUE.WPN=1 TO 15, WRITE REPLACEMENT(BLUE.WPN)
  61              AS D(8,1) SKIP 1 LINE
  62        FOR BLUE.WPN=16 TO 30, WRITE REPLACEMENT(BLUE.WPN)
  63              AS D(8,1) SKIP 1 LINE
  64        FOR BLUE.WPN=1 TO 15, WRITE RETURN.TO.DUTY(BLUE.WPN)
  65              AS D(8,1) SKIP 1 LINE
  66        FOR BLUE.WPN=16 TO 30, WRITE RETURN.TO.DUTY(BLUE.WPN)
  67              AS D(8,1) SKIP 1 LINE
  68        FOR BLUE.WPN=1 TO 15, WRITE REPP.POOL(BLUE.WPN)
  69              AS D(8,1) SKIP 1 LINE
  70        FOR BLUE.WPN=16 TO 30, WRITE REPP.POOL(BLUE.WPN)
  71              AS D(8,1) SKIP 1 LINE
  72        FOR BLUE.WPN=1 TO 15, WRITE RETURN.POOL(BLUE.WPN)
  73              AS D(8,1) SKIP 1 LINE
  74        FOR BLUE.WPN=16 TO 30, WRITE RETURN.POOL(BLUE.WPN)
  75              AS D(8,1) SKIP 1 LINE
  76        FOR BLUE.WPN=1 TO 15, WRITE SURV.ASSET(BLUE.WPN)
  77              AS D(8,1) SKIP 1 LINE
  78        FOR BLUE.WPN=16 TO 30, WRITE SURV.ASSET(BLUE.WPN)
  79              AS D(8,1) SKIP 1 LINE
  80        FOR BLUE.WPN=1 TO 15, WRITE SURV.ASSET(BLUE.WPN)
  81              AS D(8,1) SKIP 1 LINE
  82        FOR BLUE.WPN=16 TO 30, WRITE SURV.ASSET(BLUE.WPN)
  83              AS D(8,1) SKIP 1 LINE
  84   USE 6 FOR OUTPUT
  85   LOOP FOR EVERY CEM.SAMPLE DO
  86     PRINT 1 LINE THUS
 /READING BLUE QTY. ENGD., K & M KILL
  88   LOOP FOR EVERY B.CEM.WPN DO
  89        READ ONLINE
  90        LET TB.QTY.ON.HAND(B.CEM.WPN,CEM.SAMPLE)=ONLINE/2
  91        READ DEAD
  92        LET TK.KILL(B.CEM.WPN,CEM.SAMPLE)=DEAD
  93        READ PTDEAD
  94        LET TM.KILL(B.CEM.WPN,CEM.SAMPLE)=PTDEAD
  95   ENDLOOP
  96     SKIP 1 LINE
  97     PRINT 1 LINE WITH PTDEAD AND CEM.SAMPLE THUS
LAST BLUE VALUE READ WAS ******.* FOR NGAG **
  99     PRINT 1 LINE THUS
 /READING RED QTY LOST
 101   LOOP FOR EVERY R.CEM.WPN DO
 102   READ DEAD
 103   LET TR. TY.LOSS(R.CEM.WPN,CEM.SAMPLE) = DEAD
 104   ENDLOOP
```

Figure III.2.21 (Cont.)

```
 LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

  105  PRINT 1 LINE WITH DEAD AND CEM.SAMPLE THUS
LAST PED VALUE READ WAS ******.* FOR NGAG **
  107  ENDLOOP
  108  SKIP 1 LINE
  109  PRINT 1 LINE THUS
/START 8 CEM TO 4 TR SAMPLES FOR BLUE WPNS
  111  FOR EACH SAMPLE, DO
  112     LET CEM.SAMPLE = SAMPLE
  113     FOR EACH B.CEM.WPN, DO
  114        LET TRB.QTY.ON.HAND(B.CEM.WPN,SAMPLE) =
  115             TB.QTY.ON.HAND(B.CEM.WPN,CEM.SAMPLE)
  116        LET TRK.KILL(B.CEM.WPN,SAMPLE) = TK.KILL(B.CEM.WPN,CEM.SAMPLE)
  117        LET TRM.KILL(B.CEM.WPN,SAMPLE) = TM.KILL(B.CEM.WPN,CEM.SAMPLE)
  118  PRINT 1 LINE WITH SAMPLE,CEM.SAMPLE, B.CEM.WPN,
  119   TRB.QTY.ON.HAND(B.CEM.WPN,SAMPLE),
  120                TRK.KILL(B.CEM.WPN,SAMPLE),
  121                TRM.KILL(B.CEM.WPN,SAMPLE)
  122  THUS
FOR SAMPLE = ** NGAG = ** B.CEM.WPN = **  *****.*  *****.*  *****.*
  124     ENDLOOP
  125  ENDLOOP
  126     SKIP 1 LINE
  127     PRINT 2 LINES THUS
   /8 CEM TO 4 TR SAMPLES FOR BLUE COMPLETED
   /START MAP BLUE DATA FROM CEM TO AMMO IDS
  130  LOOP FOR EVERY SAMPLE DO
  131  LOOP FOR EVERY BLUE.WPN DO
  132  PRINT 1 LINE WITH SAMPLE,BLUE.WPN AND BLUE.ID(BLUE.WPN) THUS
SAMPLE ** BLUE WPN ** BLUE.ID(BLUE.WPN) **
  134  IF BLUE.ID(BLUE.WPN) = 99
  135     LET B.QTY.ON.HAND(BLUE.WPN,SAMPLE) = 1
  136     LET K.KILL(BLUE.WPN,SAMPLE) = 1
  137     LET M.KILL(BLUE.WPN,SAMPLE) = 1
  138     GO TO LOOPOS
  139  REGARDLESS
  140        LET B.QTY.ON.HAND(BLUE.WPN,SAMPLE)
  141            =TRB.QTY.ON.HAND(BLUE.ID(BLUE.WPN),SAMPLE)
  142        LET K.KILL(BLUE.WPN,SAMPLE)
  143            =TRK.KILL(BLUE.ID(BLUE.WPN),SAMPLE)
  144        LET M.KILL(BLUE.WPN,SAMPLE)
  145            =TRM.KILL(BLUE.ID(BLUE.WPN),SAMPLE)
  146  PRINT 1 LINE WITH B.QTY.ON.HAND(BLUE.WPN,SAMPLE),
  147                    K.KILL(BLUE.WPN,SAMPLE)
  148                AND M.KILL(BLUE.WPN,SAMPLE)
  149  THUS
*****.* *****.* *****.*
  151  *LOOPOS* ENDLOOP
  152  ENDLOOP
  153  SKIP 1 LINE
  154  PRINT 1 LINES THUS
   /MAP BLUE DATA FROM CEM TO AMMO ID COMPLTEED
  156  PRINT 1 LINE THUS
```

Figure III.2.21 (Cont.)

```
LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

/ADDITIONAL CEM/AMMO MAPPING CORRESTIONS STARTED
  158  PRINT 1 LINE WITH DAY THUS
RECORDING K & M KILLS FOR DAY ***
  160  USE 9 FOR OUTPUT
  161  FOR I = 1 TO 4, DO
  162     FOR BLUE.WPN = 1 TO 30, DO
  163        LET NUM.K.KILL = 0.0
  164        FOR J = 1 TO N.SAMPLE
  165           ADD (COMB.SAMPLE(I,J)*K.KILL(BLUE.WPN,J)) TO NUM.K.KILL
  166        WRITE NUM.K.KILL AS D(8,1)
  167        IF BLUE.WPN = 15  SKIP 1 LINE  ALWAYS
  168     ENDLOOP
  169  ENDLOOP
  170  FOR I = 1 TO 4, DO
  171     FOR BLUE.WPN = 1 TO 30, DO
  172        LET NUM.M.KILL = 0.0
  173        FOR J = 1 TO N.SAMPLE
  174           ADD (COMB.SAMPLE(I,J)*M.KILL(BLUE.WPN,J)) TO NUM.M.KILL
  175        WRITE NUM.M.KILL AS D(8,1)
  176        IF BLUE.WPN = 15  SKIP 1 LINE  ALWAYS
  177     ENDLOOP
  178  ENDLOOP
  179  USE 6 FOR OUTPUT
  180  PRINT 1 LINES THUS
   /START 8 CEM TO 4 TR SAMPLES FOR RED WEAPONS
  182  FOR EACH SAMPLE, DO
  183     LET CEM.SAMPLE = SAMPLE
  184     FOR EACH R.CEM.WPN, DO
  185        LET TRR.QTY.LOSS(R.CEM.WPN,SAMPLE) =
  186            TR.QTY.LOSS(R.CEM.WPN,CEM.SAMPLE)
  187     ENDLOOP
  188  PRINT 1 LINE WITH SAMPLE,CEM.SAMPLE AND R.CEM.WPN AND
  189    TRR.QTY.LOSS(R.CEM.WPN,SAMPLE) THUS
FOR SAMPLE = ** NGAG = ** R.CEM.WPN = ** TRR.QTY = *****.*
  191  ENDLOOP
  192     SKIP 1 LINE
  193     PRINT 1 LINES THUS
 /8 CEM TO 4 TR SAMPLES FOR RED COMPLETED
  195  LOOP FOR EVERY SAMPLE DO
  196  LOOP FOR EVERY RED.WPN DO
  197  LET R.CEM.WPN = RED.WPN
  198  LET R.QTY.LOSS(RED.WPN,SAMPLE) = TRR.QTY.LOSS(R.CEM.WPN,SAMPLE)
  199  ENDLOOP
  200  ENDLOOP
  201  SKIP 1 LINE
  202  PRINT 1 LINE THUS
 /ORDERED CEM ON RED AMMO COMPLETED/
  204  RETURN
  205  ENDROUTINE
```

Figure III.2.21 (Cont.)

```
LINE   CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

    1  ROUTINE RATIO.COMP(JAY)
    2  NORMALLY MODE IS REAL
    3  SKIP 1 LINE
    4  PRINT 1 LINE THUS
////ENTERING RATIO$COMP////
    6  LOOP FOR EVERY BLUE.WPN DO
    7  IF BLUE.ID(BLUE.WPN) = 99
    8  CYCLE
    9  ENDIF
   10  LOOP FOR EVERY SAMPLE DO
   11  IF B.STYLIZED.QTY(BLUE.WPN,SAMPLE) > 0
   12    LET B.RATIO(BLUE.WPN,SAMPLE) = B.QTY.ON.HAND(BLUE.WPN,SAMPLE)
   13      /B.STYLIZED.QTY(BLUE.WPN,SAMPLE)
   14  ENDIF
   15  PRINT 1 LINE WITH BLUE.WPN,SAMPLE,
   16   B.RATIO(BLUE.WPN,SAMPLE)
   17   THUS
BLUE.WPN *** SAMPLE * B.RATIO **.**
   19  ENDLOOP
   20  ENDLOOP
   21  LOOP FOR EVERY SAMPLE DO
   22  FOR BLUE.WPN = 2 TO 14,DO
   23  LET B.ARMOR.ACT(SAMPLE) = B.ARMOR.ACT(SAMPLE)
   24    +B.QTY.ON.HAND(BLUE.WPN,SAMPLE)
   25  LET B.ARMOR.STY(SAMPLE) = B.ARMOR.STY(SAMPLE)
   26    +B.STYLIZED.QTY(BLUE.WPN,SAMPLE)
   27  PRINT 1 LINE WITH BLUE.WPN,SAMPLE,
   28   B.ARMOR.ACT(SAMPLE),B.ARMOR.STY(SAMPLE)
   29   THUS
BLUE.WPN *** SAMPLE *  B.ARM.ACT  *****.**  B.ARMOR.STY  *****.**
   31  ENDLOOP
   32  ENDLOOP
   33  SKIP 1 LINE
   34  PRINT 1 LINE THUS
/TOTALS BLUE ARMOR AND ICVAPC SUMMATION COMPLETED/
   36  LET BFRST(SAMPLE) = B.ARMOR.ACT(SAMPLE)/B.ARMOR.STY(SAMPLE)
   37  PRINT 1 LINE WITH SAMPLE, BFRST(SAMPLE) THUS
/SAMPLE *  BFRST(SAMPLE) ****.***
   39  ENDROUTINE
```

Figure III.2.22

```
 LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

    1  ROUTINE ESD.COMP1(DAY)
    2  NORMALLY MODE IS REAL
    3  DEFINE I AND J AS INTEGER VARIABLES
    4  SKIP 1 LINE
    5  PRINT 1 LINE THUS
////ENTERING ESD$COMP1////
    7  LOOP FOR EVERY RED.WPN DO
    8    LOOP FOR EVERY SAMPLE DO
    9      LET POS.TOT.LOS(RED.WPN,SAMPLE) = 0.
   10    ENDLOOP
   11  ENDLOOP
   12  SKIP 1 LINE
   13  PRINT 1 LINE THUS
/ZEROED POSSIBLE TOTAL RED WEAPON LOSS ARRAY FOR DAY
   15  LOOP FOR EVERY RED.WPN DO
   16   LOOP FOR EVERY BLUE.WPN DO
   17     IF PERC.K(RED.WPN,BLUE.WPN) = 99.9
   18     CYCLE
   19     ENDIF
   20     LOOP FOR EVERY SAMPLE DO
   21       LET POS.TOT.LOS(RED.WPN,SAMPLE)
   22          =POS.TOT.LOS(RED.WPN,SAMPLE)
   23          +B.RATIO(BLUE.WPN,SAMPLE)
   24          *RED.STYLIZED.LOS(RED.WPN,BLUE.WPN,SAMPLE)
   25  PRINT 1 LINE WITH RED.WPN,BLUE.WPN,SAMPLE,B.RATIO(BLUE.WPN,SAMPLE)
   26       ,RED.STYLIZED.LOS (RED.WPN,BLUE.WPN,SAMPLE)
   27       ,POS.TOT.LOS(RED.WPN,SAMPLE)
   28       ,R.QTY.LOSS(RED.WPN,SAMPLE) THUS
** ** **  ***.**    ***.**    ***.**    ***.**
   30     ENDLOOP
   31   ENDLOOP
   32  ENDLOOP
   33  SKIP 1 LINE
   34  PRINT 1 LINE THUS
/COMPUTED POSSIBLE TOTAL RED LOSS ARRAY FOR DAY
   36  LOOP FOR EVERY SAMPLE, DO
   37    LOOP FOR EVERY ESD, DO
   38      IF RED.WPN.PTR(ESD) = 0
   39        CYCLE
   40      OTHERWISE
   41      IF ESD = AVA                    **ARMOR VS. ARMOR
   42        IF R.QTY.LOSS(R.QTY.INDEX(ESD),SAMPLE) GT .9
   43          LET EQ(ESD,SAMPLE) = BFRST(SAMPLE)
   44             * R.QTY.LOSS(RED.WPN.PTR(ESD), SAMPLE)/
   45             POS.TOT.LOS(RED.WPN.PTR(ESD),SAMPLE)
   46             CYCLE
   47        ELSE
   48          LET EQ(ESD,SAMPLE) = 0.0
   49          CYCLE
   50      ENDIF
   51        IF B.RATIO.INDEX(ESD) = 1                    **BLUE RATIO
   52          LET EQ(ESD,SAMPLE) = B.RATIO(BLUE.WPN.PTR(ESD),SAMPLE)
```

Figure III.2.23

```
LINE  CACI SIMSCRIPT II.5  1100 SERIES  RELEASE 6.3

  53            CYCLE
  54         OTHERWISE
  55         IF R.QTY.LOSS(R.QTY.INDEX(ESD),SAMPLE) GT .9
  56            LET EQ(ESD,SAMPLE) = B.RATIO(BLUE.WPN.PTR(ESD),SAMPLE)
  57            * R.QTY.LOSS(RED.WPN.PTR(ESD),SAMPLE) /
  58            POS.TOT.LOS(RED.WPN.PTR(ESD),SAMPLE)
  59         ELSE
  60            LET EQ(ESD,SAMPLE) = 0.
  61         ENDIF
  62      ENDLOOP
  63   FOR ESD = 1 TO 40 , DO
  64   PRINT 1 LINE WITH ESD,SAMPLE,EQ(ESD,SAMPLE)THUS
ESD ** SAMPLE ** EQ.STY.DAY **.******
  66   ENDLOOP
  67   ENDLOOP
  68   PRINT 1 LINE WITH DAY THUS
/RECORDING ESDS FOR DAY ***
  70   USE 9 FOR OUTPUT
  71   FOR I = 1 TO 4, DO
  72      FOR ESD = 1 TO 40, DO
  73         LET EQSDAY = 0.0
  74         FOR J = 1 TO N.SAMPLE
  75            ADD (COMB.SAMPLE(I,J)*EQ(ESD,J)) TO EQSDAY
  76         WRITE EQSDAY AS D(5,2)
  77         IF ESD = 20 SKIP 1 LINE ALWAYS
  78      ENDLOOP
  79   ENDLOOP
  80   USE 6 FOR OUTPUT
  81   RETURN
  82   ENDROUTINE
```

Figure III.2.23 (Cont.)

THIS PAGE IS INTENTIONALLY LEFT BLANK

CHAPTER 3

REPORT GENERATOR PROGRAM

3.1 DESCRIPTION OF PROCESSING: The Report Generator program consists of one large program; the total listing has 914 records with 47% of the records being programmer comments or 482 records of executable FORTRAN code. The program was developed as a post-processor to the Theater Rates Model, a major component of the predecessor Ammo-Rates Methodology. It has subsequently been retained for use and application in the WARRAMP methodology.

3.1.1 PURPOSE/FUNCTIONS: The Report Generator program is designed to read four input data files, one produced by the previously discussed ESD program, the remaining three manually developed by the user/analyst. The program then computes ammunition requirements for four main consumption categories, and produces two output files. The primary output file contains three reports for the user. The secondary output file is prepared for an eventual mass storage to tape copy; the tape is subsequently furnished to the Army staff (ODCSLOG). The three reports (primary output file) are produced seperately during program execution, but merged into the one output file by the program, not the runstream.

3.1.2 PROGRAM INPUT/OUTPUT STRUCTURE: The program I/O structure is presented in Figure III.3.1. The internal integer value indicates the initial order of input for the input data files. The integer outside the flow chart symbol at the upper corner is the logical unit assigned to the input and output data files by the program run (start file) stream and is expected by the program.

3.1.2.A INPUT DATA and DATA BASE: The four input data files are not part of a formal data base organization. The files are developed or updated in the course of the application of the preceeding APP programs or manually updated in the course of the study program progress to provide current data, drawing data from the COSAGE or CEM models. It is incumbent on the user/analyst to properly catalog and maintain the input data files. It follows that the user/analyst must be consulted for the cataloged file name and element name of the current data files. A version name may be appended to the element name to assist in providing a data audit trail and to distinguish the current file. The formats of the data is given in Volume III, Chapter 3 of this documentation set. Those discussed in that volume are not duplicated herein. Below is a summary of the input data files.

The maintenance programmer should note that records 355 through 362 of the program are programmed input data values that contain integer data for the time periods and label data for output.

- AMMOUT - This file is produced by the ESD program and maintained on the system as a program (PRINT) file by the user/analyst. The file resides on a fixed mass storage device, is expected to have a classified

file qualifier and read/write keys. During the start file execution the file is referenced to logical unit 10 via the @USE command in the runstream in preparation for input to the program. The file is lengthy, and normally contains 6840 records of data; a block of 38 records contains data for each day of combat modeled in the campaign or war. All data values are real (decimal) with two formats used; the first is 15 data points per record. All the data file is read sequentially and all data values are read by the program. The data file is read early in the program without switching logical input units. Figure III.3.2 presents a sample of the data.

- o PF.ISD (Input Stylized Day) - this file element is created and maintained by the user/analyst on a user designated mass storage device. The program file can be expected to have a classified file qualifier and read/write keys. The data is @ADD'd to the program runstream and thus uses logical unit 5 for input to the program. The file is short with one record for each day of war modeled, and each record has one integer data value. The data file is read sequentially and all data values are read by the program. The data presented to the program is the stylized day sample number to be used in the program computation; however the code does not employ this value in the computations. An example of this data file is depicted in Figure III.3.3.

- o PF.DATA - this file is manually created and maintained by the user/analyst. The description of the file composition is a carry-over from the early practice of employing a punched card check for data. The file is composed of groups of records that define a weapon (firing) system that may be a component of an end item of equipment. A weapon system is defined through a group of six (6) card types. Therefore the total quantity of cards (records) necessary to provide data definition to a weapon system and the types of munitions available to it will vary. The program file resides on a fixed mass storage device is expected to have a classified file qualifier and read/write keys. The file exists as an element to the program file. The data is @ADD'd to the program runstream following the @XQT Executive-8 command as it uses logical Unit 5 for input to the program. The data file is read sequentially and all data values are read by the program.

  Figure III.3.4 presents a sample of the data file. Note that a "99" in columns 1 - 2 of a record denote the end of a block of data pertinent to a munition of a weapon system.

- o PF.TITLE - this file is manually created and maintained by the user/analysts. The program file resides on a fixed mass storage device and can be expected to have a classified qualifier and read/write keys. The file exists as an element of the program file. This file is small, containing approximately 9 lines of integer and alphanumeric data. An example of the file is depicted in Figure III.3.5. The file provides user input terms for the output report headings with

classification as well as historical sea loss data, and report pagination data. The file element is @ADD'd to the execution runstream following the @XQT Executive - 8 command and this uses logical unit 5 for input to the program. The data file is read sequentially and all data values are read by the program.

3.1.2.B OUTPUT DATA and DATA FILES: The program produces the three reports in one cataloged print file as its main function. Additionally, the special file **SEVEN is produced in a special format for transportation to the Army Staff when copied to tape. The temporary program file (TPF$) generated by the system is also produced, but not discussed in this manual. These files are a product managed by the user/analyst and are not a part of a formal database. It is incumbent upon the user to properly catalog and maintain these files. The execution runstream normally handles these functions. The runstream as well as the necessary data formats are discussed in Volume III, Chapter 3 of this documentation set. The following is a summmary of the output data files.

- o REPORT1 - This file is referred to as the "Main Report" of the program and employs the default output logical unit 6 for data placement. The file is labeled for analyst reading and interpretation. The report details for each weapon system/munitions combination, the quantities deployed and consumed for each analytical time period. An example of this output data file is depicted in Figure III.3.6. There are typically 2200 lines of output or approximately 40 pages of printed copy produced. Approximately 300 tracks of mass storage space is allocated for this report.

- o THREE - DAY PILE REPORT - This report is produced by the program in temporary file cataloged to logical unit 2 for program reference with 200 tracks of mass storage space reserved. The file is labeled for analyst reading and interpretation and contains computed output for weapon system and munition requirements, in quantites and tonnage, in 3 day increments or piles. The file typically contains 900 lines (records) or approximately 16 print pages of printed output. An example of this report is presented in Figure III.3.7. At the conclusion of computations in the program and the writing onto Unit 2, the contents of Unit 2 are edited onto Unit 6, so this report is printed out as the second part of the total report print file.

- o DISTRIBUTION OF REQUIREMENTS REPORT - This report is produced by the program and written out to a temporary file cataloged and referenced to Unit 3 for program reference with 500 tracks of mass storage space reserved. The file is labeled for analyst reading and interpretation. It contains computed output that details for each weapon/munition combination, and time period, the quantity of munitions consumed in the different consumption categories. The file typically contains 3700 lines (records) or approximately 66 pages of printed output. At the conclusion of computations and output writing in the program, the (file) contents of Unit 3 are edited onto Unit 6, so this report is printed as the third part of the total report print file. An

example of this file is depicted in Figure III.3.8.

- o SEVEN - This file is produced by the program for the specific purpose of providing logistic data to the Army staff. The file is reference via an @USE command to logical unit 7 for output (hence the name) to a permenantly cataloged file of the same name. It exists as a program or print file which does not have a classified file qualifier. The file is labeled with titling data input as well as programmed label instructions. The values output are the computed logistic rates of consumption per each of the average deployment levels per each of the twelve analytical time periods for a given weapon system and munition. An example of this output file is depicted in Figure III.3.9.

3.1.2.C DATA ELEMENT DICTIONARY: The following variable names are employed in the program.

Name	Definition
ADEP(I)	A one-dimensional real array that is set to the average deployment of a weapon system (a computed value) in each of the following analytical periods when: I = 1; days 1 - 15 I = 2; days 16 - 30 I = 3; days 1 - 30 I = 4; days 31 - 60 I = 5; days 61 - 90 I = 6; days 31 - 90 I = 7; days 1 - 90 I = 8; days 91 - 120 I = 9; days 121 - 150 I = 10; days 151 - 180 I = 11; days 91 - 180 I = 12; days 1 - 180
AMUN(I)	A one-dimensional real array set to the name of a munition used (fired) by a weapon system; reserved as 5, a system may have up to 5 types of munitions.
ATITLE(I)	A one-dimensional real (alpha) array set to the title or heading for the expenditure report; reserved as 17 to hold 102 characters of heading data (read) presented on 2 records (72 and 30, respectively).
BTITLE(I)	A one-dimensional real (alpha) array set to the title or heading for the 3-day ammunition pile report; reserved as 17 to hold 102 characters of heading data (read) presented on 2 records (72 and 30, respectively).

CONC(I)

A one-dimensional real (alpha) array set in a DATA statement in the program to "CONTINUED"; reserved as 2.

CTITLE

A one-dimensional real (alpha) array set to the title or output report heading for the distribution of requirements (DOR) report; reserved as 17 to hold 107 characters of heading data (read) presented on 2 records (72 and 30, respectively).

DAYS(I)

A one-dimensional real array set in a DATA program statement to the values as follows; reserved as 12 for the number of days of modeled combat in each period:

I =	1,2	:	15 days
I =	3,4,5	:	30 days
I =	6	:	60 days
I =	7	:	90 days
I =	8,9,10	:	30 days
I =	11	:	90 days
I =	12	:	180 days

DEP(I)

A one-dimensional real array set to the input data, or quantities of each weapon system deployed in each of the following time periods; reserved as 8:

I = 1	:	D-day
I = 7	:	days 1 - 15
I = 3	:	days 16 - 30
I = 4	:	days 31 - 60
I = 5	:	days 61 - 90
I = 6	:	days 91 - 120
I = 7	:	days 121 - 150
I = 8	:	days 151 - 180

DOR(I,J)

A two-dimensional real array set to the computed ammunition requirement in rounds of a munition of a weapon system in the ith period and jth type of requirement. Reserved as 7 by 17 with i and j defined as follows:

I :	1	=	days 1 - 15
	2	=	days 16 - 30
	3	=	days 31 - 60
	4	=	days 61 - 90
	5	=	days 91 - 120
	6	=	days 121 - 150
	7	=	days 151 - 180

J :
- 1 = Computed value from the factors input, based upon total expenditures in the time period.
- 2 = Combat losses in delay.
- 3 = Combat losses in defense intense.
- 4 = Combat losses in defense light.
- 5 = Combat losses in attack.
- 6 = Weapon system zeroing in deployment.
- 7 = Weapon system zeroing on return to duty.
- 8 = Weapon system zeroing on replacement to unit.
- 9 = Weapon system zeroing on return to replacement pool.
- 10 = Firing in delay mission.
- 11 = Firing in defense intense mission.
- 12 = Firing in defense light mission.
- 13 = Firing in attack mission.

ESD(I,J,K)

A three-dimensional real array set to the equivalent stylized day value from input data for a weapon system on the ith day, jth ESD number and kth posture or mission. Reserved as 180 (days) by 40 (ESD numbers) by 4 (missions). The values and definition of K are:

- 1 = Delay mission (posture).
- 2 = Defense Intense mission (posture).

3 = Defense Light mission (posture).

4 = Attack mission (posture).

ESL(I,J,K) — A three-dimensional real array set to the quantity of computed stylized losses for each blue equipment (weapon system) for each three-day period by posture. Reserved as 60 (3-day periods) by 30 (maximum blue weapon systems) by 4 (postures or missions).

FAC(I) — A one-dimensional real array set, on data input, to the expenditure factors for a given weapon system for the ith period. Depending upon the computational method designed, the factor may be for the 3-day pile (normal) method or a rate factor for the rates computation method. Reserved as 9, the ith value is defined as follows:

1 = Logistic loss factor

2 = H & I firing factor

3 = Days 1 - 15 firing factor

4 = Days 16 - 30 firing factor

5 = Days 31 - 60 firing factor

6 = Days 61 - 90 firing factor

7 = Days 91 - 120 firing factor

8 = Days 121 - 150 firing factor

9 = Days 151 - 180 firing factor

IA — An integer variable, set as a counter to the number of lines (records) that have been printed on a page in the main report.

IAA — An integer variable, set during data input to the number of lines (records) desired in the main report.

IAAA — An integer variable set during data input to the total number of pages desired in the main report.

IAP — An integer variable, set as a counter, to the number of pages in the main report.

IB

An integer variable, set as a counter, to the number of lines that have been printed on a page in the second (3 - Day Pile) report.

IBB

An integer variable, set on data input, to the number of lines (records) desired on a page of the 3 - Day Pile report.

IBP

An integer variable, set as a counter, to the number of pages in the 3 - Day pile report.

IBUS

An integer variable used as an indicator or flag, set on data input, to denote that a munition of a weapon system is a business round. Values used are:

1 = Business round.

0 = Non-business round.

IC

An integer variable, set on data input, to the card type being read by the program. Types are:

1 - Weapons System name card

2 - Deployment data card.

3 - Munitions data card.

4 - Expenditure factor card.

5 - Stylized losses card.

6 - Stylized expenditures card.

Note the value of 99 in the column 1 -2 position in lieu of the 6 denotes the last card (record) in the block of data defining a munition of a weapon system.

ICC

An integer variable, set on data input, to the desired number of lines (records) on a page of the third (Distribution of Requirements) report.

ICCC

An integer variable, set on data input, to the desired number of pages in the Distribution of Requirements report.

ICP

An integer variable, set as a counter, to the page of the Distribution of Requirements report.

IE	An integer variable, set as a counter, to the number of lines records in the Distribution of Requirements Report.
ID(I)	A one-dimensional integer array set on programmed data input (line 356) to the periods for report headings as follows; reserved as 7: I = 1 ; 15 2 ; 30 3 ; 60 4 ; 90 5 ; 120 6 ; 150 7 ; 180
II(I)	A one-dimensional integer array set to computed values (constants) for the 3-Day Pile Report. Reserved as 60.
IM	An integer variable set on data input on Card type 3 for a type of munition of a weapon systems to the computation method to be used for the munition. Values used are: 0 = 3-day pile method. 1 = Rates method.
ISD(I)	An integer one-dimensional array set in data input to the sample number to apply to computations on the ith day. Reserved as 180.
ISVEC(I)	An integer, one-dimensional array, set to the value of ISAM, which is always 999. Reserved as 50.
IESD	An integer variable, set on data input to the ESD number for the munition expenditures of a weapon system from card type 6.
IT	An integer variable, set on data input to the equipment type or system number on card type 5.
ITOT	An integer variable, set as a counter and used as a flag in logic tests for output printing.
JEVEC(I)	A one-dimensional integer array set to the value of IESD, reserved as 50. The array serves as a vector to the ESD numbers for a munition of a weapon system.

IPRT

An integer variable set on data input, on Card type 2, for each weapon system as an output print flag. Values used are:

0 = Print weapon deployment levels.

1 = Do not print weapon deployment levels.

ISCALE

An integer variable set on data input, on Card type 4, for each weapon system to the exponential factor (ten to the ISCALE power) for calculations.

IS(I)

An integer one-dimensional array used for logic tests to determine output printing intervals, set on programmed data input (line 358). Reserved as 7 the set values are:

I	=	1	:	1
		2	:	16
		3	:	31
		4	:	61
		5	:	91
		6	:	121
		7	:	151

ISAM

An integer variable set on data input to the value of the sample number for the stylized expenditure on Card type 6. Set to 999, always.

ISC

An integer variable used as a counter in reading munitions card 6, expenditure data.

RATE(I)

A one-dimensional real array set to the computed expenditure rate of munitions for the ith period. Reserved as 12, the value of i correlates to the following periods:

1	:	days 1 - 15
2	:	days 16 - 30
3	:	days 1 - 30
4	:	days 31 - 60
5	:	days 61 - 90
6	:	days 31 - 90
7	:	days 1 - 90
8	:	days 91 - 120
9	:	days 121 - 150
10	:	days 151 - 180
11	:	days 91 - 180
12	:	days 1 - 180

ROUND(I)

A one-dimensional real array set to the computed number of rounds expended of a munitions in the ith period. The value of i correlates as described above for RATE(I). Reserved as 12.

SE(I)

A one-dimensional real array set to the stylized expenditure of munitions by a weapon system in a given posture. Reserved as 4; the values of i correlate as follows:

1 : Delay posture (mission)
2 : Defense intense posture
3 : Defense light posture
4 : Attack posture

SEALOSS(I)

A one-dimensional real array set to the data input shipping loss factor of a munition of a weapon system for the ith period, where is represents:

1 : days 1 - 15
2 : days 16 - 30
3 : days 31 - 60
4 : days 61 - 90
5 : days 91 - 120
6 : days 121 - 150
7 : days 151 - 180

SEVEC(J,I)

A two-dimensional real array (utilized as a vector) set to the stylized expenditures of a single munition of a weapon system in the jth posture an the ith set to SE(I). Reserved as 4 (postures) by 50 (up to 50 cards).

SFAC(I)

A one-dimensional real array set to the sum of the munition expenditure factors 2 through 9 for business round computations. Reserved as 8.

SLPS(I)

A one-dimensional real array set on data input to the stylized losses per (weapon) system by posture. Reserved as 4 (postures), the ith value corrleates as follows:

I = 1 : Delay posture (mission)
2 : Defense Intense posture
3 : Defense Light posture
4 : Attack posture

SROUND (I)	A one-dimensional real array set to the computed sum of the ROUND(I) array or the total number of rounds expended of a munition by a weapon system. Reserved as 12 for the 12 analytical time periods referred to in the ADEP(I) definition of the ith value.
STOP(I)	A one-dimensional real array set to the computed sum of the TDP(I) or three-day pile array for a munition of a weapon system; reserved as 30, the ith value correlates to a 3 day increment where: I = 1 : days 1 - 3 2 : days 4 - 6 3 : days 7 - 9, etc
STONS(I)	A one-dimensional real array set to the computed weight, in tons (2000 pounds), of a three day pile of the munitions of a weapon system. Reserved as 30 (up to 90 days), the ith value correlates to a 3-day increment as described above.
STIM(J)	A one-dimensional real array set to alphanumerics programmed (lines 360 - 362) and used as labels for the output report. Reserved as 17, the ith value or label correlates to stimulus definitions as described for variable DOR (I, J).
IDEP(I)	A one-dimensional real array set to the computed total deployment of a weapon system for the ith period. Reserved as 12, the I correlates to the analytical periods defined under ADEP(I)
TDP(I)	A one-dimensional real array set to the data input quantity of munitions expended by a weapon system in three day piles. Reserved as 30, I correlates to the 3 - day period, up to 90 days, as defined in STDP(I).
TONS(I)	A one-dimensional real array set to the computed weight of a three-day pile of munitions of a weapon system, in tons (2000 lbs). Reserved as 12, the ith value correlates to the analytical period as defined under ADEP(I).
TOTAL(I)	A one-dimensional real array used to hold the programmed alphanumeric input (line 359) used for output report labeling; reserved as 2 and set to "WEAPONTOTAL".

TSTONS(I) — A one-dimensional real array set to the computed total tons of all munitions expended by a weapon system in a period. Reserved as 12, the ith analytical period correlates to the periods defined under ADEP(I).

WPN(I) — A one-dimensional real array set to the data input alphanumeric name of the weapon of analytical interest. Reserved as 10 to hold up to 40 charactors of information.

WEIGHT — A real variable set on data input to the pounds per round, in decimal fraction, of a munition of a weapon system.

ZE(I,J) — A two-dimensional real array set to the computed zeroing requirements. Reserved as 60 by 30 for the breakout of 180 day to 60 3-day periods and the 30 3-day pile data for each blue equipment.

ZZE(I,J,K) — A three-dimensional real array set to computed zeroing requirements for each analytical period (I), for each zeroing stimulus (J) and each equipment type (K). Reserved as 7 by 4 by 30, the index values correlate as follows:

I = 1 : days 1 - 15
2 : days 16 - 30
3 : days 31 - 60
4 : days 61 - 90
5 : days 91 - 120
6 : days 121 - 150
7 : days 151 - 180

J = 1 : Initial Deployment
2 : Return to Duty to Unit
3 : Replacement to Unit
4 : Return to Replacement Pool

K = Weapon System (Equipment) type as input, value 1 - 30.

ZERO — A real variable set on data input to the quantity of rounds required to zero the weapon system.

3.1.3 PROGRAM PROCESSING: The program has no subroutines; hence the program is self contained and executes sequentially.

3.1.3.A PROGRAM RUN DESCRIPTION - The procedure or "START" file to

execute the Report Generator Porgram is depicted and discussed in Volume III, Chapter 3 of this documentation set. The start file as well as the object program and source code resides in permanently cataloged program file elements under the current APP user/analysts' computer user identification number. The start file or execution runstream is designed to be submitted as a batch run to the system. The submission is normally made in the demand mode from a computer terminal. The program requires approximately 25K words (36 - bit) of main memeory for execution and approximately 3 minutes of CPU time. It runs on the system in under 18 minutes of clock time.

3.1.3 PROGRAM LOGIC - The program logic is depicted and flow charted in Figure III.3.10. The program source code is provided in Figure III.3.11.

3.1.3.C PROCESSING FEATURES - The Report Generator performs the following functions:

- o Initializes the program by:
  - oo computing values for the II (I) array
  - oo Reading the AMMOUT data, computing selected array values and storing data in arrays.
  - oo Reads the titling data
- o Titles the output reports
- o Reads the Data file containing munitions and weapons data cards 1 through 6.
- o Based upon the input computation method, computes either
  1) The normal or pile methods followed by rates computations, or
  2) The rates method.
  - oo If the pile method is used writes out the report on Unit 2.
- o Write out the results for the ODCSLOG report on unit 7.
- o Writes out the main report on Unit 6
- o Writes out the distribution of requirements report on unit 3.
- o Edits the 3 - Day pile report onto Unit 6.
- o Edits the DOR onto unit 6.

3.2 OPERATING ENVIRONMENT - The Report Generator program is

implemented on the USACAA UNIVAC 1100/82 computer. The program is submitted to the system in the demand mode and is processed in a batch environment for efficient use of resources. The program was developed under the UNIVAC architecture with 36 - bit computer words (6 - byte).

3.2.1 HARDWARE - The UNIVAC 1100/82 mainframe and perpheral devices support the program maintenance and application. The program execution runstream fixed or removable disk (on-line) storage requirements are as follows:

Unit 2 - 200 tracks
Unit 3 - 500 tracks
Unit 6 - 1000 (breakpointed file) tracks
Unit 7 - default, 128 tracks

Tape processing is not a part of the program execution; the **SEVEN file mass storage to tape copy must be performed by the use at a computer terminal. A printer is employed for a hard copy of the output files. Normally the operating system directs the assignment of the mass storage (disk) devices.

3.2.2 SUPPORT SOFTWARE - The program compilation and application (execution) requires the following system processors:

@FOR -- The FORTRAN IV language processor or compiler.

@MAP -- The processor or collector to form the executable program from the from the compiler produced relocatable object code.

@ED -- The editor processor.

3.2.2.A OPERATING SYSTEM - The UNIVAC EXECUTIVE - 8 operating system provides the necessary support for the program. The supporting software is contained in the system library (SYSLIB and SYS$RLIB$).

3.2.2.B COMPILER - The operating system library contains the FORTRAN IV compiler and is accessed by the EXECUTIVE - 8 command @FOR. Refer to UNIVAC Publication (UP) 4060 for runstream requirements and features for compilation.

3.2.3 DATABASE - The data base and files necessary for program execution were discussed in paragraph III.3.2.A. These files are all FIELDDATA in System Data Format. These files exist as user cataloged files and elements and are not part of a formal database structure.

3.3 MAINTENANCE PROCEDURES - The relative size of the program and it's containment within one program minimizes the maintenance. The maintenance extends to insuring that a copy of the symbolic (source) code is preserved (on tape or punched cards), that page by page changes are made to the documentation as changes/maintenance is accomplished, and that the

symbolic code be annotated with comments by the programmer personnel can track the changes. The following information is pertinent to the program maintenance (space provided for notes):

Source (symbolic) code Filename.Element name:

Absolute (object) code Filename.Element name:

Space Required, source code:

Space Required, absolute code:

Archived tape label and Locations:

Read/Write keys - established by current custodian, name:

3.3.1 PROGRAMMING CONVENTIONS - The program follows standard FORTRAN programming techniques. Highlights are as follows:

- o The data variables are defined in commented records at the beginning of the programs symbolic code.
- o All read and write format statements are declared at the beginning of the program.
- o Implied Do-loops are used.
- o The source code is liberally commented and highlighted.
- o Computed Go-to statements are employed.
- o The source code contains programmed data in records 355 - 362.
- o The integer to real "FLOAT" conversion is used.
- o Programmed edit statements are used at the end of the program to copy file contents.

3.3.2 VERIFICATION PROCEDURES - The program is verified by performing execution runs of the program with test data, which must be followed by hand calculations of the same data utilizing the source code algorithms and, then comparing results. The sequence of the execution can be tracked with the output files.

3.3.3 ERROR CORRECTION PROCEDURES - The program does not employ any programmed debugging aids or calls to an "error-found" subroutine. One program stop may be made on line 856, otherwise completion is expected and any error will result in an abnormal termination. Debugging and error correction is accomplished by an examination of the output. Three types of errors that may occur are:

- o Data (input) errors -- data presented in a mode (integer or real alphanumeric) other than expected by the program may cause an error, which will be presented as a system error.

  Data presented in excess of the reserved arrays may induce an error. Debugging of data must be accomplished by a visual examination of the data files (print copy or at the terminal) or tracing the progress via the output files.

- o Program error - program errors are resolved by checking the compilation listing and obtaining and examining a relocatable code listing after the program collection (@MAP) to insure that all references and call addresses are resolved. A post mortum dump may be produced by using the @PMD Executive - 8 command in the runstream and then examining the contents of the instruction (I - BANK) bank and data (D - BANK) bank.

- o System error - the run output file (TPF$) will list the system diagnosed errors for subsequent tracing and correction. These errors often occur as result of an error in the runstream.

3.3.4 SPECIAL MAINTENANCE PROCEDURES - No special maintenance procedures are developed or required for this program.

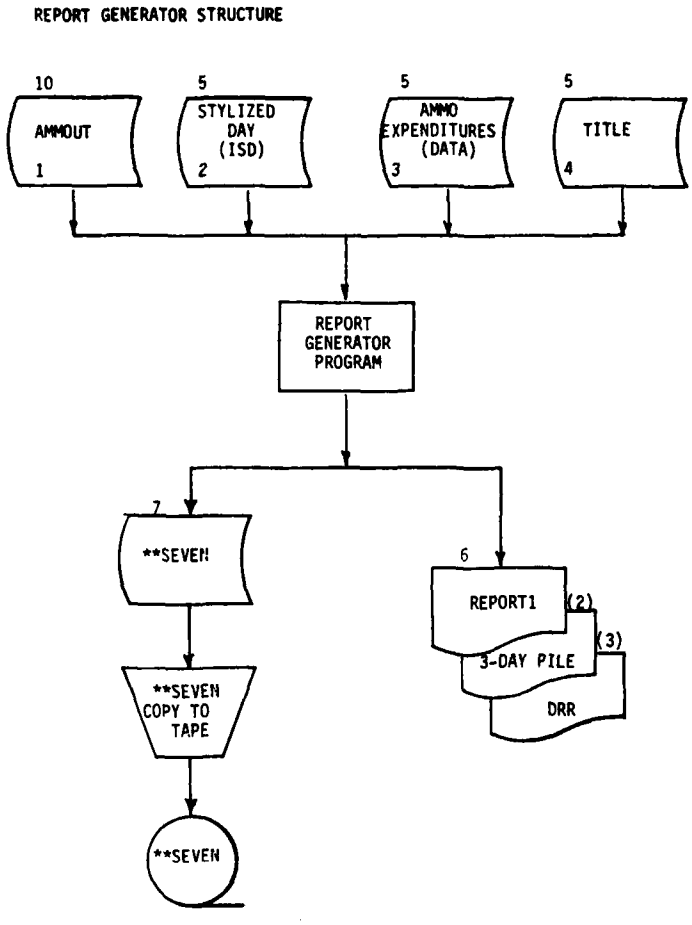


Figure III.3.1

```
6759:99.    0.    0.18  0.03  0.    0.02  0.02  0.    0.27  0.    0.18  0.17  0.    0.32  0.    0.21  0.20  0.    0.05  0.06
6760: 0.16  0.13  0.14  0.08  0.09  0.10  0.11  0.03  0.03  0.01  0.08  0.10  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
6761:99.    0.    0.11  5.60  0.82  2.39  2.23  0.    3.41  0.50  1.45  1.36  0.   20.00  2.93  8.52  7.98  0.    2.93  2.06
6762: 9.74  0.15  5.39  0.10  3.37  0.12  4.42  0.04  1.63  1.34  0.82  4.80  0.01  0.03  0.01  0.03  0.02  0.04  0.00  0.29
6763:99.    0.    0.73  0.47  0.    0.15  0.14  0.    0.89  0.    0.29  0.27  0.    0.02  0.    0.27  0.25  0.    0.07  0.07
6764: 0.81  1.13  0.17  0.77  0.23  0.87  0.29  0.48  0.16  0.01  0.03  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
6765:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6766:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6767:    2500.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6768:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6769:     63.4    0.7     1.4     4.1     0.      0.5     0.      0.      0.      1.7     0.      1.7    39.7     1.7     0.
6770:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6771:   2552.3    0.6     1.1     3.3     0.      0.4     0.      0.      0.      1.3     0.      1.3    31.7     1.3     0.
6772:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6773:      0.0   -0.0     1.4     4.1     0.     -0.0     0.0    -0.0     0.0     0.0     0.      0.0     0.0     0.0     0.
6774:     -0.0    0.0     0.0     0.      0.      0.0     0.      0.      0.      0.      0.      0.      0.      0.      0.
6775:329782.   2053.1  1083.   3257.1    0.     93.8  4962.4   680.1    98.6   374.1    0.     84.8  1014.8   374.1    0.
6776:      90.  1101.9   325.      0.     0.    115.9     0.      0.      0.      0.      0.      0.      0.      0.      0.
6777:329782.   2053.1  1083.   3257.1    0.     93.8  4962.4   680.1    98.6   374.1    0.     84.8  1014.8   374.1    0.
6778:      93.  1101.9   326.      0.     0.    115.9     0.      0.      0.      0.      0.      0.      0.      0.      0.
6779:    100.9    0.      0.2     0.6     1.      0.      0.      0.      0.1     0.      1.      0.      0.      0.      1.
6780:       0.    0.1     0.      1.      1.      0.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6781:    100.1    0.      0.4     1.1     1.      0.      0.      0.      0.      0.      1.      0.      0.      0.      1.
6782:       0.    0.1     0.      1.      1.      0.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6783:     97.2    0.      0.      0.      1.      0.      0.      0.      0.      0.2     1.      0.4     5.5     0.2     1.
6784:      1.7   20.2     0.      1.      1.      2.1     1.      1.      1.      1.      1.      1.      1.      1.      1.
6785:    203.4    0.      4.6    13.7     1.      0.      0.6     0.1     0.      0.      1.      0.      0.6     0.      1.
6786:      0.1    1.6     0.5     1.      1.      0.1     1.      1.      1.      1.      1.      1.      1.      1.      1.
6787:      1.9    0.2     0.1     0.4     1.      0.      0.      0.      0.      0.      1.      0.      0.2     0.      1.
6788:       0.    0.1     0.      1.      1.      0.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6789:      2.8    0.      0.2     0.7     1.      0.      0.      0.      0.      0.      1.      0.      0.3     0.      1.
6790:       0.    0.1     0.      1.      1.      0.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6791:      8.5    0.      0.      0.      1.      0.3     0.      0.      0.      0.9     1.      1.4    48.1     0.9     1.
6792:      1.7   20.2     0.      1.      1.      2.1     1.      1.      1.      1.      1.      1.      1.      1.      1.
6793:     35.3    0.      2.5     7.6     1.      0.      0.      0.      0.      0.0     1.      0.2     5.0     0.0     1.
6794:      0.1    1.6     0.5     1.      1.      0.1     1.      1.      1.      1.      1.      1.      1.      1.      1.
6795:99.    0.    0.01  0.01  0.    0.01  0.01  0.    0.03  0.    0.03  0.03  0.    0.02  0.    0.02  0.02  0.    0.00  0.07
6796: 0.02  0.02  0.02  0.01  0.01  0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.    0.    0.    0.    0.    0.    0.00  0.00
6797:99.    0.    0.01  0.    0.    0.01  0.00  0.    0.    0.    0.06  0.06  0.    0.    0.    0.07  0.06  0.    0.    0.
6798: 0.04  0.01  0.03  0.01  0.02  0.01  0.02  0.00  0.01  0.00  0.00  0.01  0.    0.    0.    0.    0.    0.    0.00  0.00
6799:99.    0.    0.12  6.51  1.65  2.36  2.21  0.    4.26  1.00  1.54  1.44  0.   24.44  6.18  8.65  8.28  0.    2.62  2.57
6800:10.05  0.16  6.20  0.11  4.22  0.13  4.81  0.04  1.77  1.51  0.99  5.66  0.01  0.03  0.01  0.03  0.02  0.04  0.00  0.29
6801:97.    0.    0.05  0.    0.    0.23  0.21  0.    0.    0.    0.54  0.51  0.    0.    0.    0.30  0.28  0.    0.07  0.
6802: 0.92  1.03  0.31  0.70  0.21  0.80  0.24  0.44  0.13  0.01  0.04  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.02  0.00
6803:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6804:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6805:    2500.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6806:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6807:     63.4    0.7     1.4     4.1     0.      0.5     0.      0.      0.      1.7     0.      1.7    39.7     1.7     0.
6808:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6809:   2552.3    0.6     1.1     3.3     0.      0.4     0.      0.      0.      1.3     0.      1.3    31.7     1.3     0.
6810:       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6811:      0.0   -0.0     1.4     4.1     0.     -0.0     0.0    -0.0     0.0     0.0     0.      0.0     0.0     0.0     0.
6812:     -0.0    0.0     0.0     0.      0.      0.0     0.      0.      0.      0.      0.      0.      0.      0.      0.
6813:329782.   2053.1  1083.   3257.1    0.     93.8  4962.4   680.1    98.6   374.1    0.     84.8  1014.8   374.1    0.
6814:      90.  1101.9   326.      0.     0.    115.9     0.      0.      0.      0.      0.      0.      0.      0.      0.
6815:329782.   2053.1  1083.   3257.1    0.     93.8  4962.4   680.1    98.6   374.1    0.     84.8  1014.8   374.1    0.
```

Figure III.3.2

```
UNCLASSIFIED*S6ESDGEN(11).ISD
  1    1
  2    1
  3    1
  4    2
  5    1
  6    1
  7    1
  8    1
  9    2
 10    1
 11    1
 12    1
 13    2
 14    1
 15    1
 16    1
 17    1
 18    1
 19    1
 20    1
 21    1
 22    1
 23    1
 24    1
 25    1
 26    2
 27    1
 28    1
 29    2
 30    1
 31    2
 32    2
 33    2
 34    1
 35    1
 36    2
 37    2
 38    2
 39    1
 40    1
 41    1
 42    2
 43    2
 44    1
 45    2
 46    1
 47    1
 48    1
 49    1
 50    2
 51    1
 52    1
 53    2
 54    2
 55    1
 56    2
 57    2
 58    1
 59    1
 60    1
 61    1
 62    1
 63    2
 64    1
 65    2
 66    1
 67    2
 68    1
 69    1
 70    2
 71    2
 72    1
 73    2
 74    2
 75    1
 76    2
 77    2
 78    1
 79    2
 80    1
 81    1
 82    1
 83    1
 84    1
 85    1
 86    2
 87    2
 88    1
 89    2
 90    2
 91    1
 92    1
 93    2
 94    1
 95    1
 96    2
 97    1
 98    1
 99    2
100    2
101    1
102    1
103    2
104    2
105    1
106    1
107    2
108    1
109    1
110    2
111    1
112    2
113    2
114    1
115    2
116    2
117    1
118    1
119    1
120    2
121    1
122    2
123    2
124    2
125    1
126    1
127    1
128    2
129    1
130    2
131    2
132    1
133    1
134    1
135    1
136    2
137    1
138    1
139    1
140    1
141    1
142    1
143    1
144    2
145    1
146    1
147    1
148    1
149    2
150    1
151    2
152    2
153    1
154    1
155    2
156    2
157    2
158    1
159    1
160    1
161    1
162    1
163    1
164    1
165    1
166    1
167    1
168    1
169    1
170    1
171    1
172    1
173    1
174    1
175    1
176    2
177    1
178    1
179    1
180    1
```

Figure III.3.3

```
DATA

  1: 1RIFLE,M16A1  5.56MM
  2: 2  422921  13301C  170688  214863   18280    9986    5118    2026
  3: 3BALL                          10              .04
  4:E00701 R94967 R94977
  5: 4  .14         84E6   61E6   43E6    4E6     2E6     1E6
  6: 5       1          0          0       0       0      17.
  7:99999    3          0        7.4     235.9    44.5
  8: 3TRACER                        10              .04
  9:E00702 R94967 R94977
 10: 4  .14
 11:99999    3          0       1.85     58.98   11.13
 12: 1SQUAD AUTOMATIC WPN (SAW) 5.56 MM
 13: 2    6598    2075    2663    3352     285     156      80
 14: 3BALL                         10              .04
 15:E04601 Z40270
 16: 4  .14          4F6  1.6E6  1.5E6  3.6E6 763680  77440 103680
 17: 5       1          0          0       0       0    .0389
 18:99999    3      52763     110791     13920    231784
 19: 3TRACER                       10              .04
 20:E04602 Z40270
 21: 4  .14
 22: 5       1          0          0       0       0    2.58
 23:99999    3      13191      27698      3480     57946
 24: 1REVOLVER,CAL .38
 25: 2    1E20    1E20    1E20    1E20    1E20    1E20    1E20    1E201
 26: 3BALL                           01              .04
 27:E05C00 R91107 R91244
 28: 4    0    0    .89    .89    .89    .89    .89    .89    .89
 29:99999
 30: 1PISTOL,CAL .45
 31: 2    1E20    1E20    1E20    1E20    1E20    1E20    1E20    1E201
 32: 3BALL                           01              .06
 33:E05700 N96741
 34: 4    0    0    .30    .30    .30    .30    .30    .30    .30
 35:99999
 36: 1SUBMACHINEGUN,CAL .45
 37: 2    1E20    1E20    1E20    1E20    1E20    1E20    1E20    1E201
 38: 3BALL                           01              .06
 39:E05700 U56346
 40: 4    0    0    .61    .61    .61    .61    .61    .61    .61
 41:99999
 42: 1SHOTGUN,12 GAUGE
 43: 2    1E20    1E20    1E20    1E20    1E20    1E20    1E20    1E201
 44: 3"00" BUCKSHOT                  01              .19
 45:E00200 T39223
 46: 4    0    0   5.04   5.04   5.04   5.04   5.04   5.04   5.04
 47:99999
 48: 1MACHINEGUN,7.62  (GROUND MOUNT)
 49: 2   16266    3522    4115    9488    2100     140     188     130
 50: 3BALL/TRACER                    10              .10
 51:E02002 Z13388 L92386
 52: 4  .14       12.5E6 3.25E6 3.38E6  7.5E6 1.75E6 129800 150400
 53: 5       1          0          0       0       0    .98
 54:99999    3      28448      83558     12861     38448
 55: 1MACHINEGUN, 7.62  (IFV & CFV MOUNT)
 56: 2    1229     228     211     384     138
 57: 3BALL-TRACER (4 TO 1)           10              .10

DATA
```

Figure III.3.4

```
DATA

  58:E02002 Z40038
  59: 4  .14          1E7 487600
  60: 5       14    7600.00    7600.00    7600.00    7600.00  50.
  61: 5       10    4400.00    4400.00    4400.00    4400.00  50.
  62:99999     3          0          0          0          0
  63: 1MACHINEGUN, 7.62  (TANK MOUNTED)
  64: 2    3447      306     1066     2331        0
  65: 3BALL-TRACER (4 TO 1)                10              .10
  66:E02002 L92352 Z39970
  67: 4  .14
  68: 5        2  11400.00  11400.00  11400.00  11400.00  50.
  69: 5        3   5960.00   5960.00   5960.00   5960.00  50.
  70: 5        4   5960.00   5960.00   5960.00   5960.00  50.
  71: 5        6  11400.00  11400.00  11400.00  11400.00  50.
  72:99999    17   1019.00   2535.00    544.00    290.00
  73: 1MACHINEGUN,M2HB,CAL .50 (GROUND MOUNT)
  74: 2    2610      425      992     2156      352
  75: 3API/API-T                           10              .44
  76:E06900 L91838 L92975 L91427
  77: 4  .14
  78: 5        1          0          0          0          0     2.96
  79:99999     3      30576      51556      2340       5880
  80: 1MACHINEGUN,M2HB,CAL .50 (APC MOUNT)
  81: 2    2496      134      832     2074        0
  82: 3API-APIT                            10              .44
  83:E06900 L91701
  84: 4  .14          1E6 242600 727800     1E6 525200
  85: 5       13    600.00     600.00     600.00     600.00  40.
  86: 5       12    600.00     600.00     600.00     600.00  40.
  87: 6999    40     28.00      16.00     262.00     113.00
  88: 6999    40      2.8        1.60      26.20      11.30
  89:99999    38    000.00     000.00     000.00     000.00
  90: 1MACHINEGUN,CAL .50 (TANK MOUNTED) M85
  91: 2    3447      306     1066     2331        0
  92: 3API-APIT                            10              .44
  93:E08400 L92112
  94: 4  .06
  95: 5        2   1000.00    1000.00    1000.00    1000.00  40.
  96: 5        3    900.00     900.00     900.00     900.00  40.
  97: 5        4    900.00     900.00     900.00     900.00  40.
  98: 5        6   1000.00    1000.00    1000.00    1000.00  40.
  99: 6999    14    000.00    0000.00    000.00     000.00
 100: 6999    17    000.00    0000.00    000.00     000.00
 101: 6999    16   0000.00    0000.00    000.00     000.00
 102: 6999    15    000.00     000.00     00.00      00.00
 103: 6999     4     00.00     000.00      0.00       0.00
 104: 6999     5     00.00     000.00      0.00       0.00
 105: 6999     6    000.00     000.00      0.00       0.00
 106: 6999     7      0.00      00.00      0.00       0.00
 107: 6999     9     00.00      00.00      0.00       0.00
 108: 6999    10     00.00      00.00      0.00       0.00
 109: 6999    11     00.00      00.00      0.00      00.00
 110:99999    12      0.00       0.00      0.00       0.00
 111: 1SU MACHINE GUN 5.56MM(PORT FIRING)
 112: 2    3906      726      672     2076        0
 113: 3BALL                               10              .04
 114:   :1 Z41940
```

Figure III.3.4 (Cont.)

```
DATA
 115: 4   .14
 116: 5       10    3360.00    3360.00    3360.00    3360.00   144.
 117:99999
 118: 3TRACER                              10              .04
 119:E04602 Z41940
 120: 4   .14
 121: 5       10     840.00     840.00     840.00     840.00   36.
 122:99999
 123: 1GUN, 25MM, BUSHMASTER (IFV & CFV MTD)
 124: 2     1229      228      211      522        0
 125: 3HEIT                                 10              1.32
 126:E08201 Z41940 Z42003
 127: 4   .14
 128: 5       14     536.00     687.00    1047.00     668.00    4.
 129: 5       10     236.00     274.00     781.00     285.00    4.
 130: 6999     3     2020.0      452.0        9.0      210.0
 131: 6999    33        .00        .00        .00        .00
 132: 6999    34     000.00     000.00     217.16     000.00
 133: 6999    35        .00        .00        .00        .00
 134: 6999    36     000.00    0000.00      00.00     000.00
 135: 6999    34     000.00      00.00      43.43     000.00
 136:99999    36     000.00     000.00       0.00     000.00
 137: 3APDS-T                               10              1.20
 138:E08202 Z41940 Z42003
 139: 4   .14
 140: 5       14     717.00     579.00     440.00     798.00    1.
 141: 5       10     298.00     570.00     110.00     586.00    1.
 142: 6999    33     000.00     000.00       0.00     000.00
 143: 6999    34     000.00     000.00      54.84      00.00
 144: 6999    35     000.00     000.00       0.00     000.00
 145: 6999    36     000.00     000.00     000.00     000.00
 146: 6999    34     000.00     000.00       0.00     000.00
 147:99999    36     000.00     000.00      00.00     000.00
 148: 1GRENADE LAUNCHER,40MM (M79/M203)
 149: 2    23356     5536     5750    15114     2831      114      144      100
 150: 3M433 HE-DP                           10              .78
 151:E12600 L44575 L44595
 152: 4   .14     0 28892.   6750. 15114.   2831.    114.    144.    100.
 153:99999     3       5728      10729       3246       1950
 154: 3M583 SIG STAR PARA (WHITE)     01              1.04
 155:E12000 L44575 L44595
 156: 4     G     0     .02     .02     .02     .02     .02     .02     .02
 157:99999
 158: 3 M662 SIG STAR PARA (RED)      01              1.04
 159:E12400 L44575 L44595
 160: 4     0     0     .02     .02     .02     .02     .02     .02     .02
 161:99999
 162: 3 M661 SIG STAR PARA (GREEN)    01              1.04
 163:E13300 L44575 L44595
 164: 4     0     0     .02     .02     .02     .02     .02     .02     .02
 165:99999
 166: 3XM713 SIG SMOKE (RED)          01              1.71
 167:E11300 L44575 L44595
 168: 4     C     0     .07     .07     .07     .07     .07     .07     .07
 169:99999
 170: 3XM715 SIG SMOKE (GREEN)        01              1.71
 171:E11400 L44575 L44595
```

Figure III.3.4 (Cont.)

```
UNCLASSIFIED*56ESDGEN(1).TITLE88/ANDY
      1       (U) RATES AND REQ. FOR CONV. MUNITIONS FOR WARRAMP V15 AUG 81)
      2
      3        (U) THREE DAY INCREMENTAL REQUIREMENT FOR CONVENTIONAL MUNITIONS FOR EU
      4       ROPE P88 WARRAMP ANDY TEST
      5       EUROPE-P88 WARRAMP ANDY TEST                  DISTRIBUTION OF REQUIREME
      6       NT
      7         0.0  0.0 .031 .027 0.00 0.00 0.00
      8       505040
      9       401866
```

Figure III.3.5

(U) RATES AND REQ. FOR CONV. MUNITIONS FOR WARRAMP V

RIFLE,M16A1 5.56MM

PERIODS (DAYS):	D-DAY	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
TOTAL DEPLOYMENT:	422921.	555931.	726619.	726619.	941482.	959762.	941482.
AVERAGE DEPLOYMENT:		489426.	641275.	565350.	834050.	950622.	699700.
PERIOD (DAYS):		1- 90	91-120	121-150	151-180	91-180	1-180
TOTAL DEPLOYMENT:		959762.	969748.	974866.	976892.	976892.	976892.
AVERAGE DEPLOYMENT:		783341.	964755.	972307.	975879.	970980.	877161.

BALL

PERIOD (DAYS):		1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
QUANTITY:		99698166.	71741649.	171439814.	54569655.	5914246.	226009468.
TONNAGE:		1993.96	1434.83	3428.80	1091.39	118.28	4520.19
RATE:		13.58	7.46	10.11	2.18	.21	5.38
PERIOD (DAYS):		1- 90	91-120	121-150	151-180	91-180	1-180
QUANTITY:		231923712.	8204953.	4672030.	1991101.	10868085.	242791796.
TONNAGE:		4638.47	84.10	93.44	39.82	217.36	4855.84
RATE:		3.29	.15	.16	.07	.12	1.54

TRACER

PERIOD (DAYS):		1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
QUANTITY:		936.	15231237.	15232173.	39400719.	28382530.	54632892.
TONNAGE:		.02	304.62	304.64	788.01	567.65	1092.66
RATE:		.000	1.583	.898	1.575	.995	1.301
PERIOD (DAYS):		1- 90	91-120	121-150	151-180	91-180	1-180
QUANTITY:		83015422.	5747225.	43504966.	44691748.	93943939.	176959360.
TONNAGE:		1660.31	114.94	870.10	893.83	1878.88	3539.19
RATE:		1.178	.199	1.491	1.527	1.075	1.121

WEAPON TOTALS

PERIOD (DAYS):		1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
QUANTITY:		99699101.	86972886.	186671986.	93970374.	34296776.	280642360.
TONNAGE:		1993.98	1739.46	3733.44	1879.41	685.94	5612.85
RATE:		13.58	9.04	11.01	3.76	1.20	6.68
PERIOD (DAYS):		1- 90	91-120	121-150	151-180	91-180	1-180
QUANTITY:		314939132.	9952178.	48176996.	46682849.	104812023.	419751156.
TONNAGE:		6298.78	199.04	963.54	933.66	2096.24	8395.02
RATE:		4.47	.34	1.65	1.59	1.20	2.66

SQUAD AUTOMATIC WPN (SAW) 5.56 MM

PERIODS (DAYS):	D-DAY	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
TOTAL DEPLOYMENT:	6598.	8673.	11336.	11336.	14688.	14973.	14688.
AVERAGE DEPLOYMENT:		7635.	10004.	8820.	13012.	14830.	10916.
PERIOD (DAYS):		1- 90	91-120	121-150	151-180	91-180	1-180
TOTAL DEPLOYMENT:		14973.	15129.	15209.	15209.	15209.	15209.
AVERAGE DEPLOYMENT:		12221.	15051.	15169.	15209.	15143.	13682.

Figure III.3.6

(U) RATES AND REQ. FOR CONV. MUNITIONS FOR WARRAMP V

BULK ALLOTMENT ITEMS (UNIT/1000 MEN/DAY)
(CONTINUED)

SMOKE POT, FLOATING, M7A1

	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
PERIOD (DAYS):						
QUANTITY:	3206.	8656.	11862.	26322.	19824.	38184.
TONNAGE:	70.91	191.48	262.39	582.24	438.50	844.63
RATE:	.42	.95	.71	1.12	.71	.95

	1- 90	91-120	121-150	151-180	91-180	1-180
PERIOD (DAYS):						
QUANTITY:	58008.	9529.	23542.	27025.	60096.	118103.
TONNAGE:	1283.13	210.78	520.75	597.80	1329.32	2612.45
RATE:	.85	.33	.81	.93	.69	.76

STARTER, FIRE, M2

	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
PERIOD (DAYS):						
QUANTITY:	1406.	1406.	2812.	2899.	2888.	5711.
TONNAGE:	.06	.06	.11	.12	.12	.23
RATE:	.18	.15	.17	.12	.10	.14

	1- 90	91-120	121-150	151-180	91-180	1-180
PERIOD (DAYS):						
QUANTITY:	8599.	2812.	2812.	2812.	8436.	17034.
TONNAGE:	.34	.11	.11	.11	.34	.68
RATE:	.13	.10	.10	.10	.10	.11

MOPMS

	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
PERIOD (DAYS):						
QUANTITY:	3188.	3040.	6227.	11315.	8120.	17542.
TONNAGE:	.00	.00	.00	.00	.00	.00
RATE:	.41	.33	.37	.48	.29	.44

	1- 90	91-120	121-150	151-180	91-180	1-180
PERIOD (DAYS):						
QUANTITY:	25662.	6779.	6135.	8387.	21301.	46963.
TONNAGE:	.00	.00	.00	.00	.00	.00
RATE:	.38	.24	.21	.29	.25	.30

WEAPON TOTALS

	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
PERIOD (DAYS):						
QUANTITY:	1938219.	1899195.	3837415.	6320119.	5395077.	10157533.
TONNAGE:	3056.71	2975.33	6032.04	8803.94	6640.64	14835.98
RATE:	252.18	208.27	228.35	269.30	193.27	252.22

	1- 90	91-120	121-150	151-180	91-180	1-180
PERIOD (DAYS):						
QUANTITY:	15552611.	5037616.	6166091.	7546019.	18749726.	34302335.
TONNAGE:	21476.62	5307.52	8007.66	11052.95	24368.13	45844.75
RATE:	228.09	175.12	213.39	260.45	216.42	221.56

SUMMARY OF TONNAGE FOR ALL MUNITIONS

	1- 15	16- 30	1- 30	31- 60	61- 90	1- 60
PERIOD (DAYS):						
TOTAL TONNAGE:	494935.69	399806.87	894742.55	1076973.75	876996.25	1971716.98

	1- 90	91-120	121-150	151-180	91-180	1-180
PERIOD (DAYS):						
TOTAL TONNAGE:	2848662.41	662111.39	995934.79	329941.19	1937987.36	4286649.19

Figure III.3.6 (Cont.)

(U) THREE DAY INCREMENTAL REQUIREMENT FOR CONVENTIONAL MUNITIONS FOR WARRAMP TEST (1 OF 18)

RIFLE,M16A1 5.56MM
BALL

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	2521083.	317525.	334153.	237533.	527884.	558187.	514869.	154195.	160231.	819203.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	432143.	215873.	630688.	694667.	529130.	339371.	317519.	531464.	113288.	104727.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	618208.	80864.	72160.	57908.	54129.	50960.	55740.	68453.	67774.	72564.

RIFLE,M16A1 5.56MM
TRACER

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	101.	203.	188.	207.	237.	240.	2189009.	6475335.	3374524.	3192128.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	5472184.	5198712.	5472297.	4104344.	2553958.	2280371.	3009959.	3374717.	3648339.	3101145.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	4651509.	3648343.	4742711.	3739496.	2097914.	2827452.	2280235.	912260.	1277038.	1459393.

SQUAD AUTOMATIC WPN (SAW) 5.56 MM
BALL

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	229516.	362352.	408359.	382309.	245421.	270442.	298401.	403181.	347336.	595074.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	690117.	763489.	762856.	598644.	627721.	560224.	538840.	427973.	588543.	480867.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	460654.	404127.	444121.	453910.	352301.	351217.	272402.	257710.	223504.	292591.

SQUAD AUTOMATIC WPN (SAW) 5.56 MM
TRACER

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	438487.	138473.	152498.	131366.	141024.	151859.	152318.	124027.	110960.	271794.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	225256.	223323.	285891.	254482.	236715.	191143.	182500.	187156.	164060.	135043.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	208445.	113051.	121753.	122054.	96070.	95357.	76386.	74620.	65979.	84002.

MACHINEGUN,7.62 (GROUND MOUNT)
BALL/TRACER

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	316957.	298267.	332115.	304608.	215194.	243341.	219476.	206090.	215703.	419286.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	389738.	487735.	524780.	419415.	464563.	409151.	385711.	300802.	382268.	314628.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	314629.	258139.	264330.	289782.	231947.	216542.	162873.	179296.	149489.	189042.

MACHINEGUN, 7.62 (IFV & CFV MOUNT)
BALL-TRACER (4 TO 1)

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	395204.	352317.	499733.	563696.	453857.	546881.	551999.	721039.	693131.	882189.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	945505.	964050.	929782.	710779.	668042.	772297.	778289.	717345.	792403.	711257.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	764723.	749849.	721107.	758795.	586496.	533354.	447997.	374148.	352739.	338466.

Figure III.3.7

(U) THREE DAY INCREMENTAL REQUIREMENT FOR CONVENTIONAL MUNITIONS FOR WARRAMP TEST (2 OF 10)

MACHINEGUN, 7.62 (TANK MOUNTED)
BALL-TRACER (4 TO 1)

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	1132824.	1626936.	2368628.	1536453.	1008622.	1102271.	1047475.	1895396.	1670011.	2563537.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	2715310.	3398711.	3374836.	2406274.	2371694.	2276729.	2034546.	1910102.	2146914.	1855677.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	2081217.	1836970.	1789799.	2100614.	1394696.	1550988.	1471229.	1986614.	1085729.	1328066.

MACHINEGUN,M2HB,CAL .50 (GROUND MOUNT)
API/API T

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	536677.	209902.	235902.	207395.	193553.	206314.	188367.	123605.	139329.	382192.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	307067.	317693.	376448.	330440.	331139.	268917.	243150.	229674.	233654.	186137.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	240850.	133058.	140446.	155088.	131774.	125575.	99468.	109156.	88347.	126427.

MACHINEGUN,M2HB,CAL .50 (APC MOUNT)
API-APII

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	287112.	174231.	215222.	148296.	103282.	130022.	150144.	253093.	231335.	327020.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	307452.	331549.	354276.	287454.	251508.	243261.	246517.	255428.	266449.	256240.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	295241.	238346.	236057.	243558.	179237.	198296.	185988.	129814.	145546.	153365.

MACHINEGUN,CAL .50 (TANK MOUNTED) M85
API-APII

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	262028.	218408.	295261.	170461.	104282.	108642.	119270.	221531.	198128.	319029.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	307926.	393051.	402959.	316067.	308733.	266584.	253655.	237945.	256288.	234879.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	275218.	219344.	216004.	246057.	163981.	189871.	162036.	131925.	133240.	162760.

SUBMACHINE GUN 5.56MM(PORT FIRING)
BALL

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	288533.	146004.	158869.	177944.	144619.	172751.	182661.	228352.	221649.	301086.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	304188.	303543.	297994.	236111.	230645.	244040.	253824.	235570.	249572.	226645.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	257638.	234191.	225594.	236544.	182190.	165763.	139558.	116980.	109637.	104953.

SUBMACHINE GUN 5.56MM(PORT FIRING)
TRACER

PERIOD (DAYS):	1- 3	4- 6	7- 9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
QUANTITY:	72133.	36501.	39717.	44486.	36155.	43188.	45665.	57088.	55412.	75271.
PERIOD (DAYS):	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60
QUANTITY:	76047.	75886.	74499.	59028.	57661.	61010.	63456.	58892.	62393.	56661.
PERIOD (DAYS):	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90
QUANTITY:	64410.	58548.	56399.	59136.	45548.	41441.	34889.	29245.	27409.	26238.

Figure III.3.7 (Cont.)

RIFLE,M16A1 5.56MM
BALL

PERIOD (DAYS):	1- 15	16- 30	31- 60	61- 90	91-120	121-150	151-180
FAC-IN:	84000000.	61000000.	43000000.	4000000.	2000000.	1000000.	0.
LOS-DE:	0.	0.	0.	0.	0.	0.	0.
LOS-DI:	0.	0.	0.	0.	0.	0.	0.
LOS-DL:	0.	0.	0.	0.	0.	0.	0.
LOS-AT:	0.	0.	0.	0.	0.	0.	0.
ZE-DEP:	2622012.	892211.	1623721.	468877.	0.	0.	0.
ZE-RTO:	64034.	79813.	217410.	126361.	80536.	78921.	86319.
ZE-REP:	765207.	956308.	1576369.	466638.	1602311.	3010326.	1647075.
ZE-RTR:	0.	0.	0.	0.	0.	0.	0.
EXP-DE:	0.	0.	0.	0.	0.	0.	0.
EXP-DI:	77.	65.	207.	95.	36.	74.	99.
EXP-DL:	3211.	2805.	10941.	9438.	5645.	8740.	12868.
EXP-AT:	0.	74.	186.	135.	28.	212.	218.
MI :	0.	0.	0.	0.	0.	0.	0.
LOG :	12243634.	8810378.	6500036.	707216.	516398.	573758.	244521.
SEA :	0.	0.	1640795.	155486.	0.	0.	0.
TOTAL :	99698173.	71741653.	54569663.	5918246.	4204954.	4672031.	1991101.

RIFLE,M16A1 5.56MM
TRACER

PERIOD (DAYS):	1- 15	16- 30	31- 60	61- 90	91-120	121-150	151-180
FAC-IN:	0.	0.	0.	0.	0.	0.	0.
LOS-DE:	0.	0.	0.	0.	0.	0.	0.
LOS-DI:	0.	0.	0.	0.	0.	0.	0.
LOS-DL:	0.	0.	0.	0.	0.	0.	0.
LOS-AT:	0.	0.	0.	0.	0.	0.	0.
ZE-DEP:	0.	0.	0.	0.	0.	0.	0.
ZE-RTO:	0.	0.	0.	0.	0.	0.	0.
ZE-REP:	0.	0.	0.	0.	0.	0.	0.
ZE-RTR:	0.	0.	0.	0.	0.	0.	0.
EXP-DE:	0.	0.	0.	0.	0.	0.	0.
EXP-DI:	19.	16.	52.	24.	9.	18.	25.
EXP-DL:	802.	700.	2732.	2357.	1409.	2182.	3213.
EXP-AT:	0.	13360018.	33520044.	24240031.	5040007.	38160050.	39200051.
MI :	0.	0.	0.	0.	0.	0.	0.
LOG :	115.	1870503.	4693196.	3393938.	705800.	5342715.	5488460.
SEA :	0.	0.	1184697.	746181.	0.	0.	0.
TOTAL :	936.	15231238.	39400719.	28382530.	5747225.	43504965.	44691748.

Figure III.3.8

SQUAD AUTOMATIC WPN (SAW) 5.56 MM
BALL

PERIOD (DAYS):	1- 15	16- 30	31- 60	61- 90	91-120	121-150	151-180
FAC-IN:	4000000.	1600000.	1500000.	3600000.	763680.	77440.	103680.
LOS-DE:	0.	0.	0.	0.	0.	0.	0.
LOS-DI:	0.	0.	0.	0.	0.	0.	0.
LOS-DL:	0.	0.	0.	0.	0.	0.	0.
LOS-AT:	0.	0.	0.	0.	0.	0.	0.
ZE-DEP:	6000.	2042.	3715.	1073.	0.	0.	0.
ZE-RTD:	147.	183.	497.	289.	184.	181.	198.
ZE-REP:	1751.	2188.	3607.	1022.	3666.	6888.	3769.
ZE-RTR:	0.	0.	0.	0.	0.	0.	0.
EXP-DE:	70702.	144043.	529213.	392557.	906996.	94973.	0.
EXP-DI:	1159982.	978284.	3099932.	1426988.	537336.	1103478.	1485707.
EXP-DL:	189451.	165509.	645610.	556939.	333106.	515736.	759336.
EXP-AT:	0.	387079.	971175.	702305.	146024.	1105610.	1135742.
HI :	0.	0.	0.	0.	0.	0.	0.
LOG :	759924.	459106.	945525.	935364.	376739.	406603.	488380.
SEA :	0.	0.	238677.	205646.	0.	0.	0.
TOTAL :	6187957.	3738434.	7937951.	7822184.	3067731.	3310909.	3976811.

SQUAD AUTOMATIC WPN (SAW) 5.56 MM
TRACER

PERIOD (DAYS):	1- 15	16- 30	31- 60	61- 90	91-120	121-150	151-180
FAC-IN:	0.	0.	0.	0.	0.	0.	0.
LOS-DE:	0.	0.	0.	0.	0.	0.	0.
LOS-DI:	0.	0.	0.	0.	0.	0.	0.
LOS-DL:	0.	0.	0.	0.	0.	0.	0.
LOS-AT:	0.	0.	0.	0.	0.	0.	0.
ZE-DEP:	397929.	135406.	246424.	71159.	0.	0.	0.
ZE-RTD:	9718.	12113.	32995.	19177.	12222.	11977.	13100.
ZE-REP:	116131.	145134.	239237.	67784.	243174.	456861.	249968.
ZE-RTR:	0.	0.	0.	0.	0.	0.	0.
EXP-DE:	17676.	36011.	132306.	98141.	226753.	23744.	0.
EXP-DI:	289998.	244573.	774990.	356750.	134335.	275872.	371430.
EXP-DL:	47363.	41377.	161402.	139235.	83276.	128934.	189834.
EXP-AT:	0.	96770.	242794.	175576.	36506.	276402.	283935.
HI :	0.	0.	0.	0.	0.	0.	0.
LOG :	123034.	99594.	256221.	129895.	103077.	164331.	155157.
SEA :	0.	0.	64677.	28558.	0.	0.	0.
TOTAL :	1001849.	810978.	2151046.	1086276.	839345.	1338122.	1763425.

Figure III.3.8 (Cont.)

```
SEVEN

 115:
 116:
 117:SSN  EQ   2       MACHINEGUN,7.62  (GROUND MOUNT)
 118:                 BALL/TRACER
 119:
 120:
 121: CAA FACTORS      L    8
 122:EUROPE- 1         57.712
 123:EUROPE- 2         17.957
 124:EUROPE- 3         26.279
 125:EUROPE- 4         26.279
 126:EUROPE- 5         29.403
 127:EUROPE- 6         29.403
 128:EUROPE- 7         17.211
 129:EUROPE- 8         17.211
 130:EUROPE- 9         19.426
 131:EUROPE-10         19.426
 132:EUROPE-11         17.015
 133:EUROPE-12         17.015
 134:
 135:
 136:SSN  EQ   2       MACHINEGUN, 7.62  (IFV & CFV MOUNT)
 137:                 BALL-TRACER (4 TO 1)
 138:
 139:
 140: CAA FACTORS      C    5      J    0
 141:EUROPE- 1         723.471     723.471
 142:EUROPE- 2         143.715     143.715
 143:EUROPE- 3         145.672     145.672
 144:EUROPE- 4         145.672     145.672
 145:EUROPE- 5          72.732      72.732
 146:EUROPE- 6          72.732      72.732
 147:EUROPE- 7          27.894      27.894
 148:EUROPE- 8          27.894      27.894
 149:EUROPE- 9          13.722      13.722
 150:EUROPE-10          13.722      13.722
 151:EUROPE-11           7.748       7.748
 152:EUROPE-12           7.748       7.748
 153:
 154:
 155:SSN  EQ   2       MACHINEGUN, 7.62  (TANK MOUNTED)
 156:                 BALL-TRACER (4 TO 1)
 157:
 158:
 159: CAA FACTORS      L    2      Z    0
 160:EUROPE- 1         162.206     162.206
 161:EUROPE- 2         214.559     214.559
 162:EUROPE- 3         217.154     217.154
 163:EUROPE- 4         217.154     217.154
 164:EUROPE- 5         124.432     124.432
 165:EUROPE- 6         124.432     124.432
 166:EUROPE- 7          62.194      62.194
 167:EUROPE- 8          62.194      62.194
 168:EUROPE- 9          61.627      61.627
 169:EUROPE-10          61.627      61.627
 170:EUROPE-11          35.660      35.660
 171:EUROPE-12          35.660      35.660

SEVEN
```

Figure III.3.9

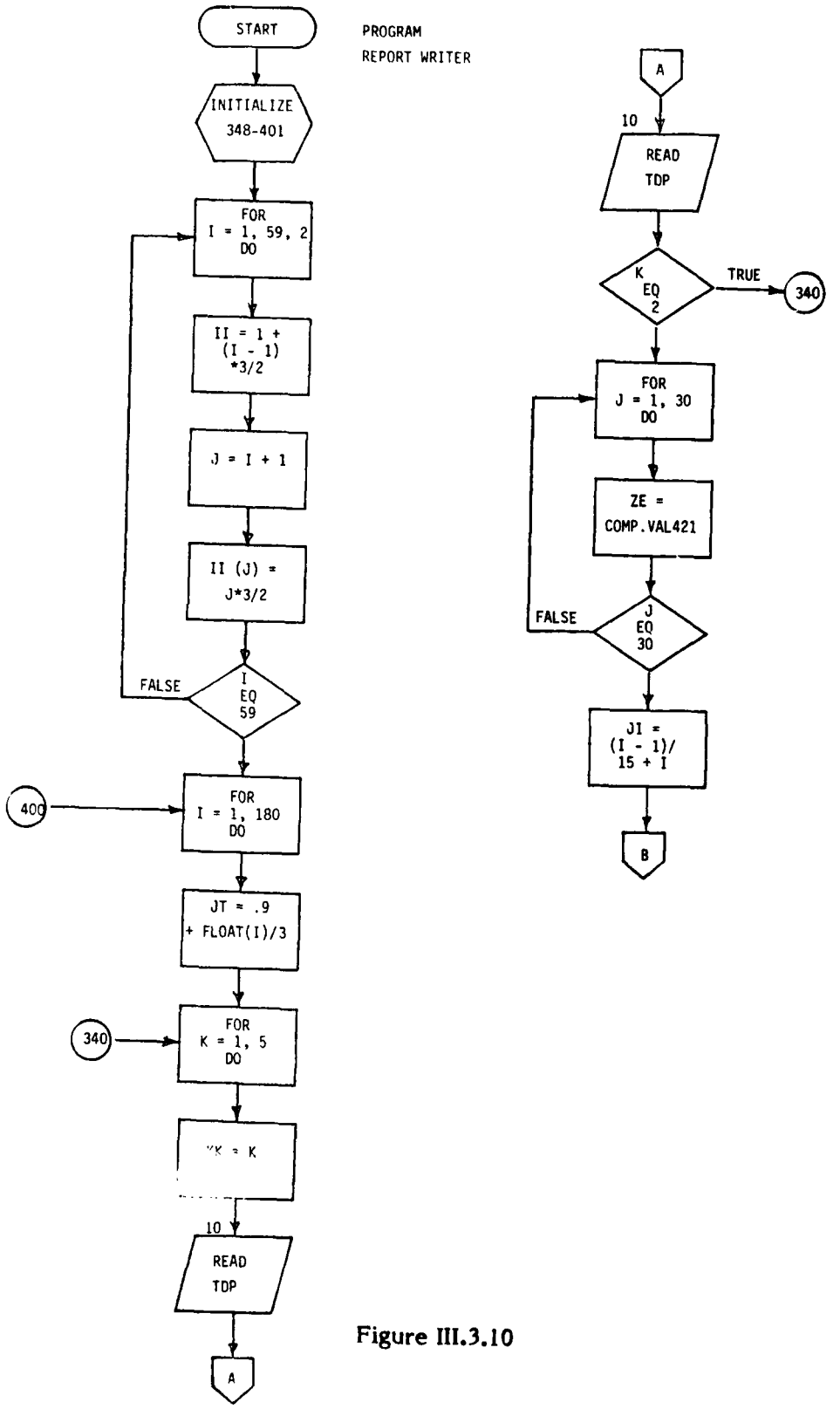


Figure III.3.10

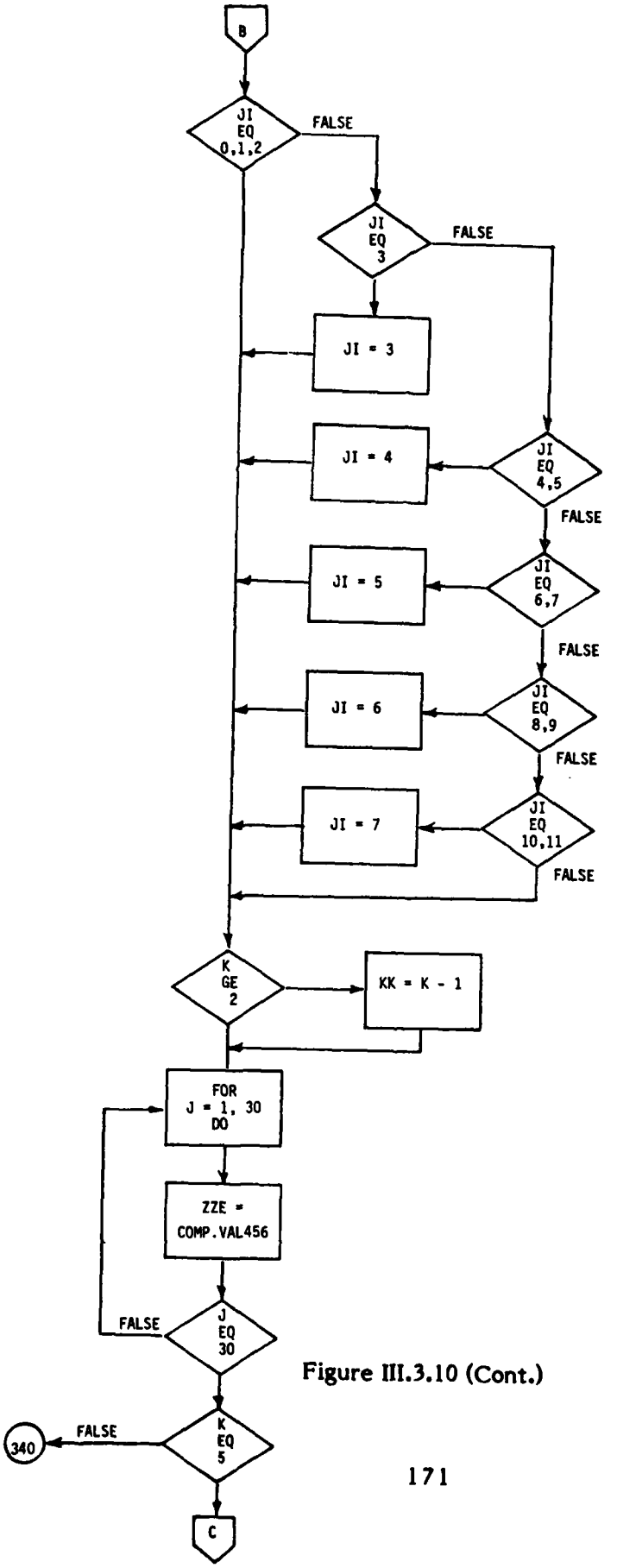


Figure III.3.10 (Cont.)

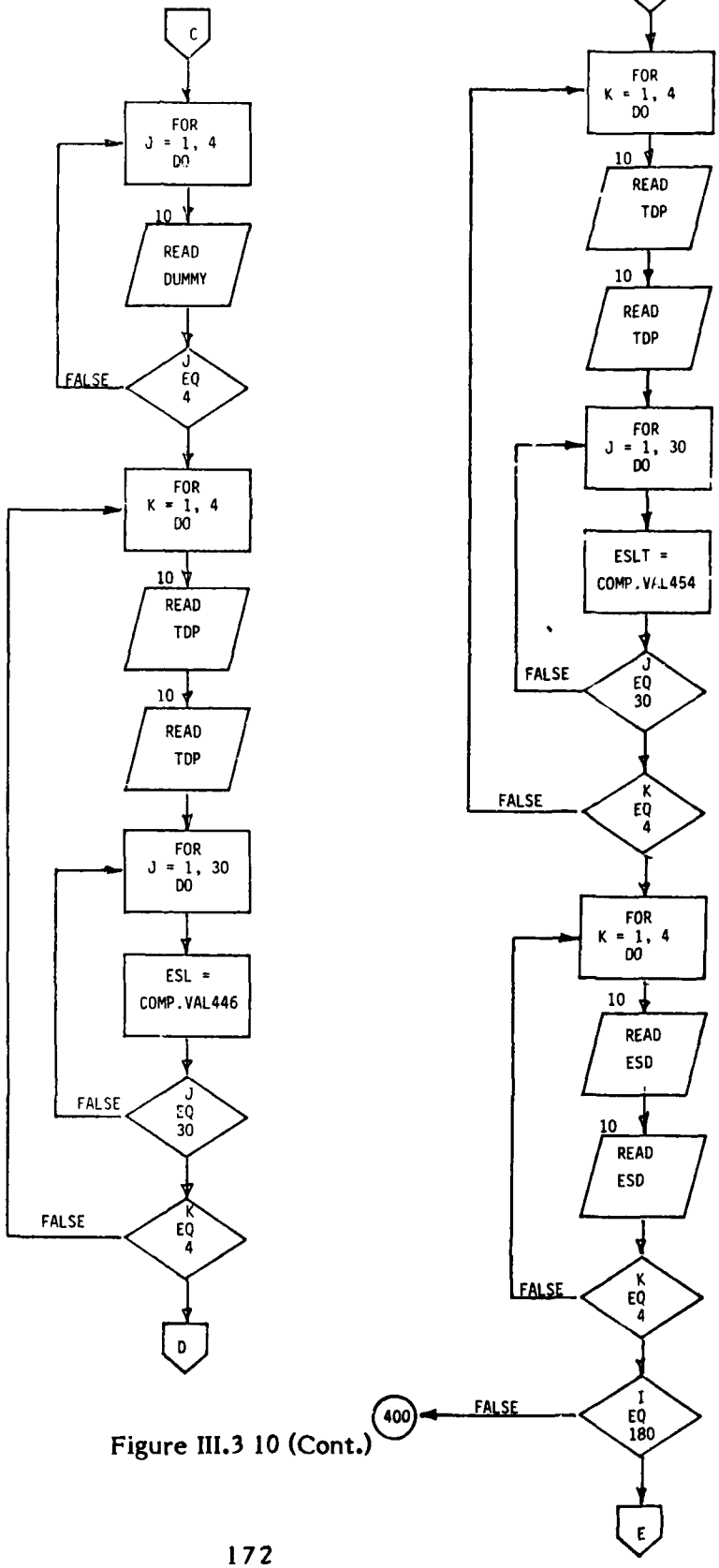


Figure III.3 10 (Cont.)

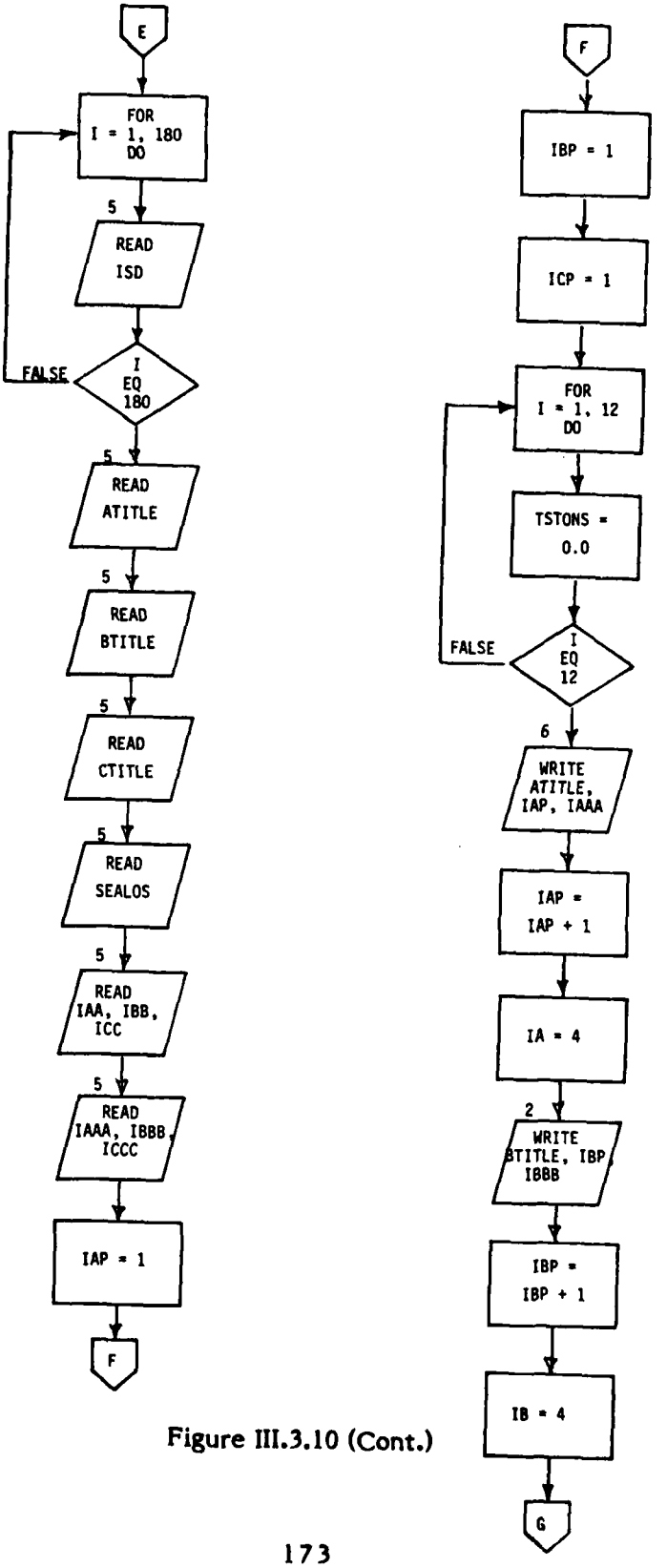


Figure III.3.10 (Cont.)

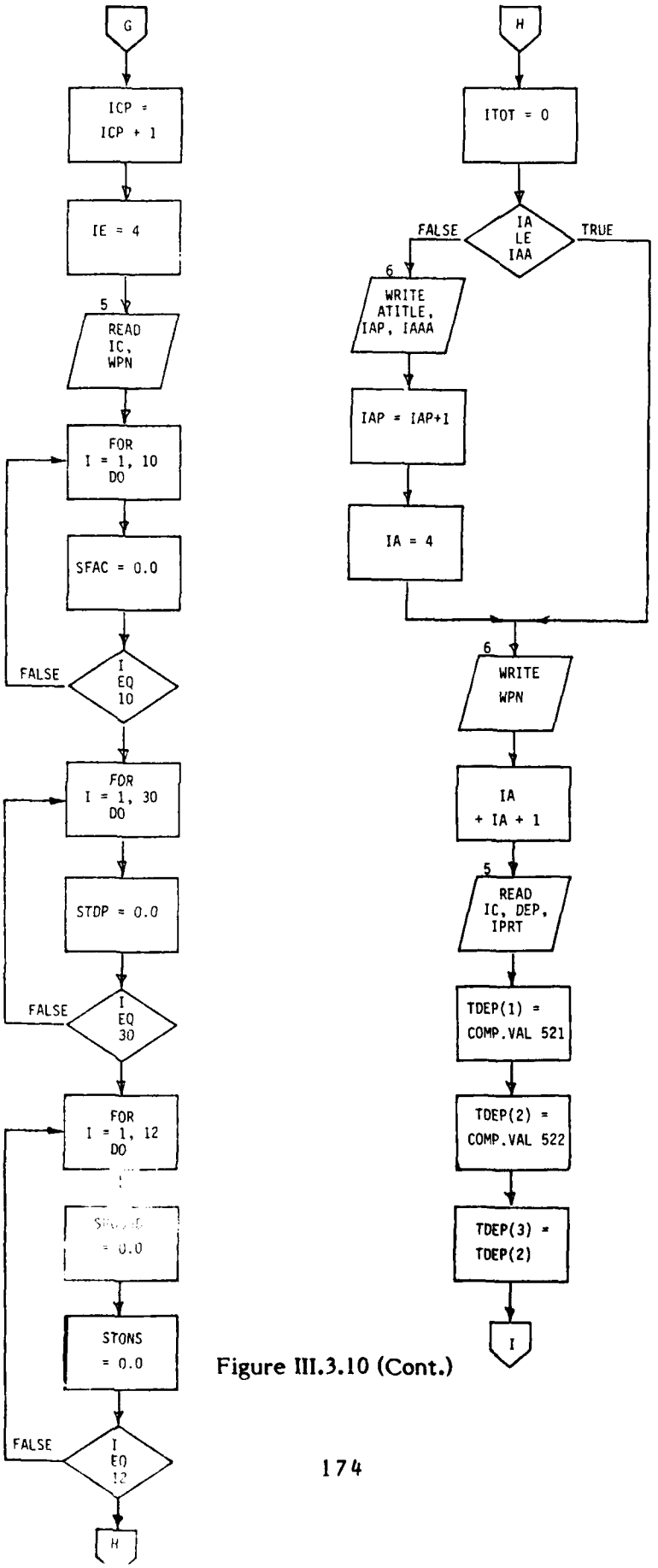


Figure III.3.10 (Cont.)

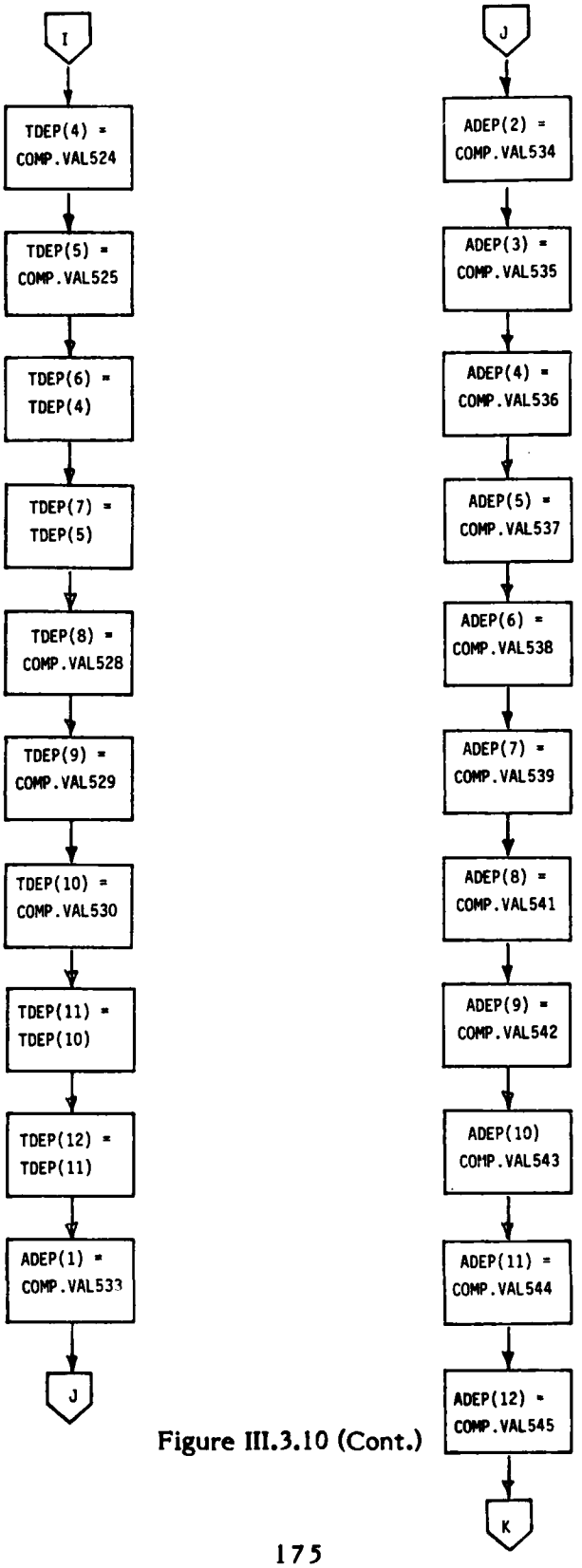


Figure III.3.10 (Cont.)

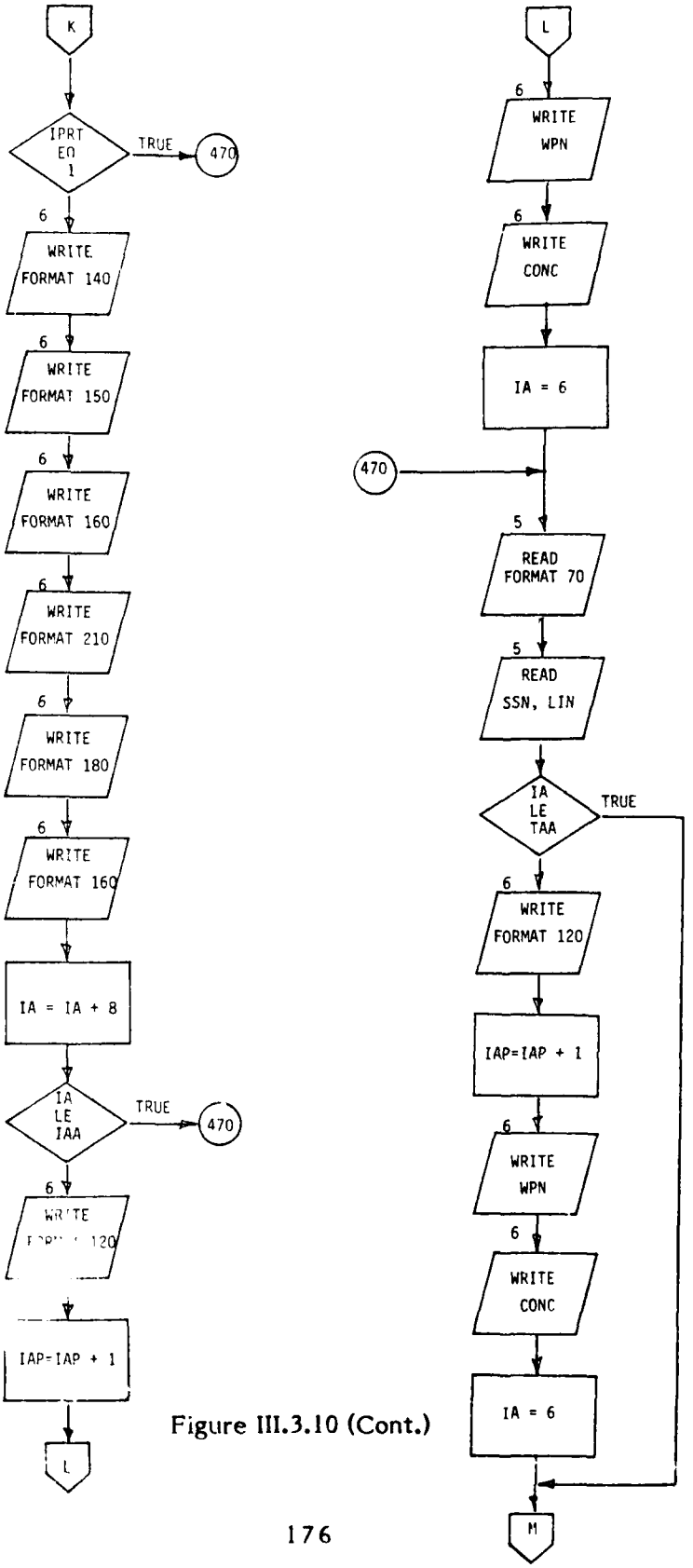
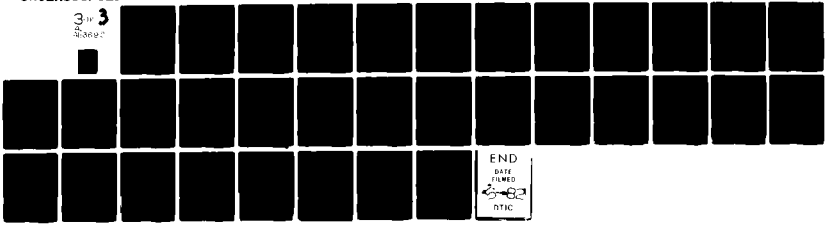


Figure III.3.10 (Cont.)

AD-A113 692 CACI INC-FEDERAL ARLINGTON VA F/G 15/7
WARTIME REQUIREMENTS FOR AMMUNITION, MATERIEL, AND PERSONNEL (W--ETC(U)
FEB 82 R G RHOADES MDA903-80-D-0668
UNCLASSIFIED CAA-D-81-2 NL



END
DATE FILMED
6-82
DTIC

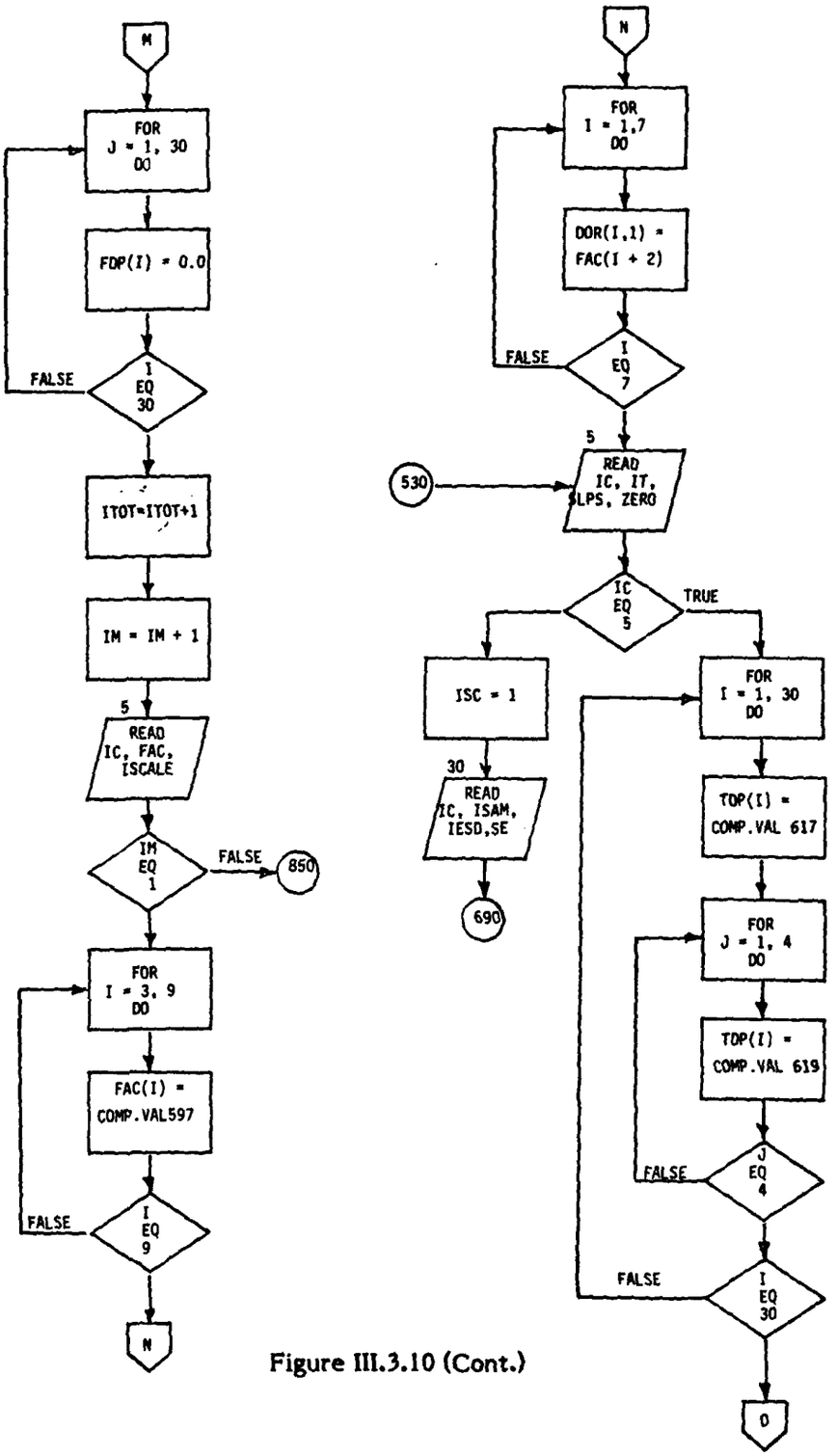


Figure III.3.10 (Cont.)

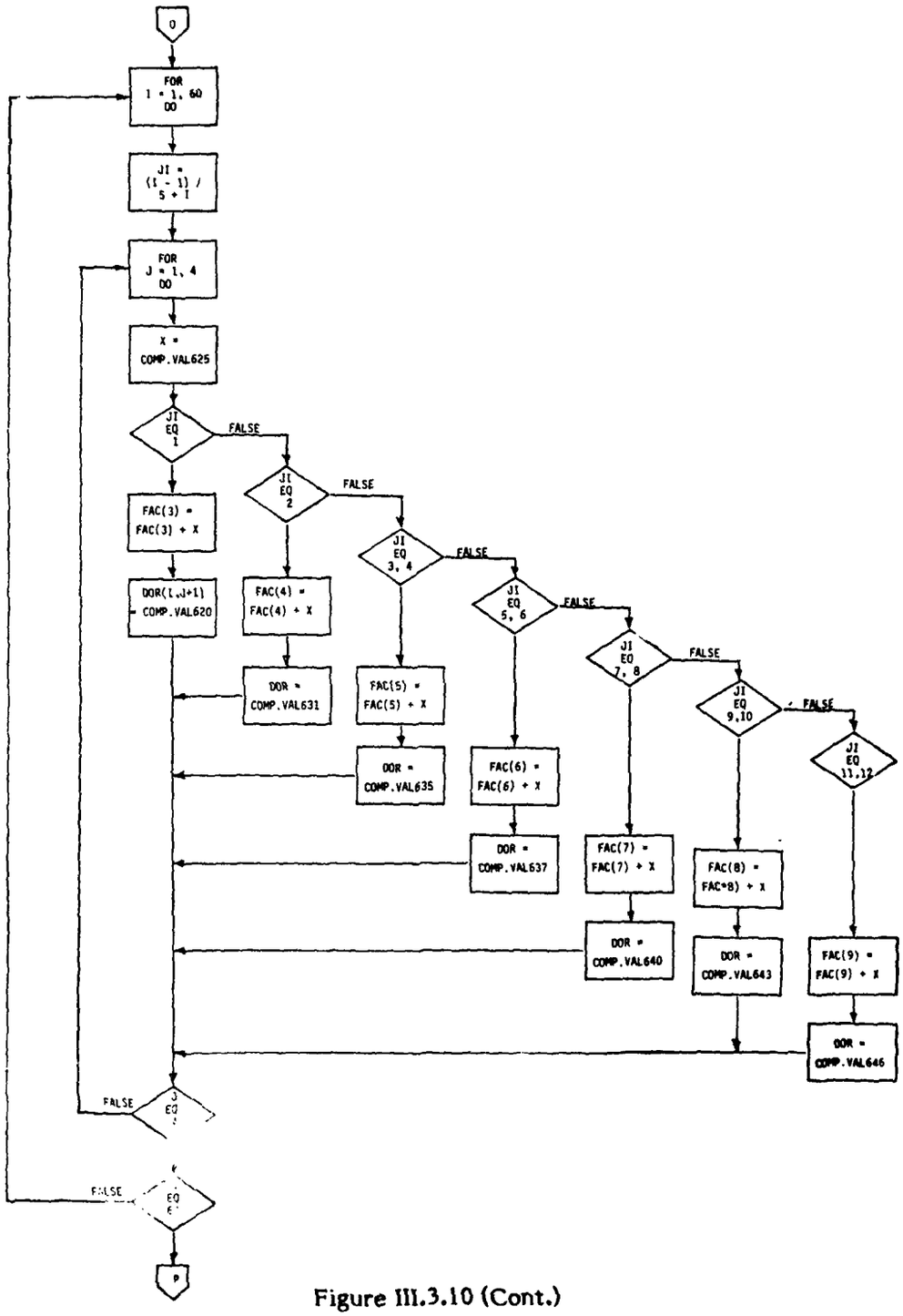


Figure III.3.10 (Cont.)

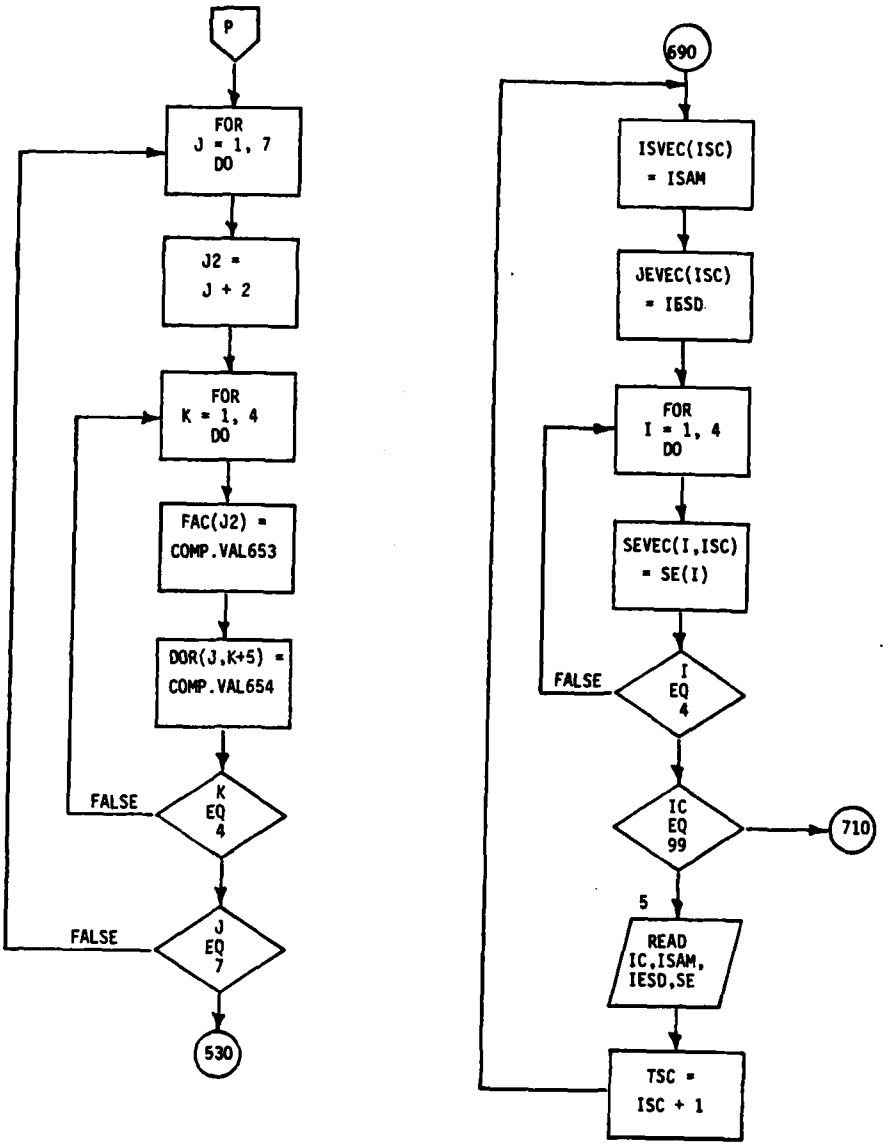


Figure III.3.10 (Cont.)

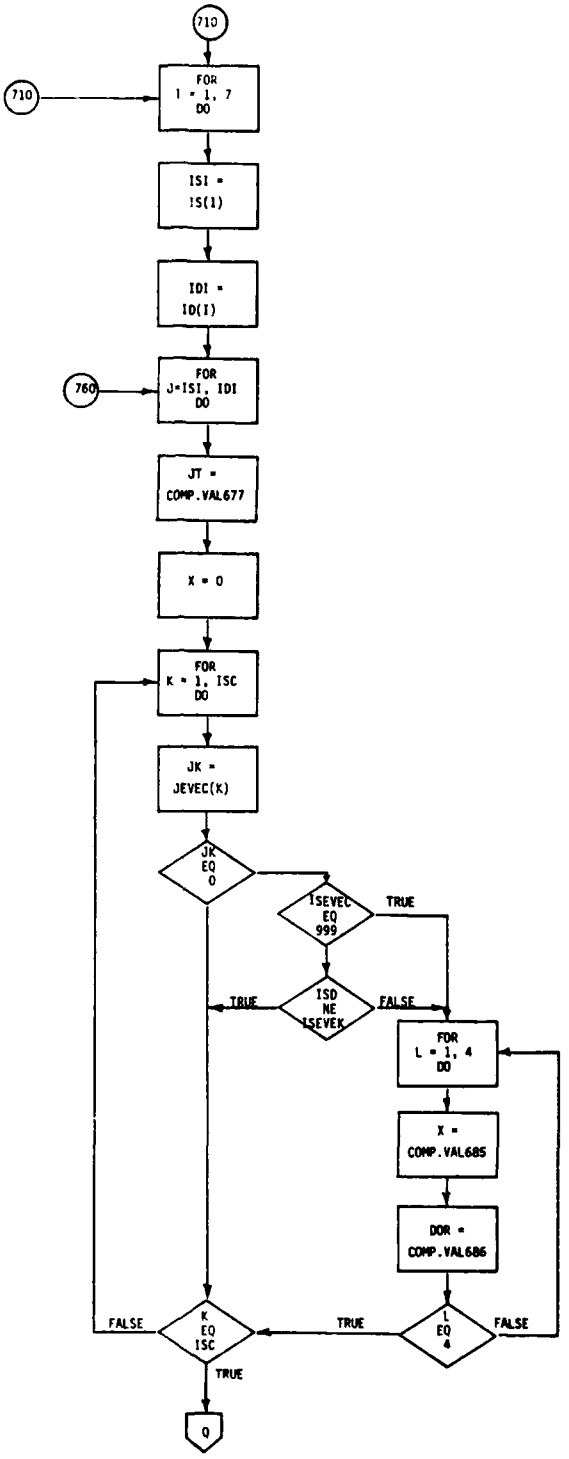


Figure III.3.10 (Cont.)

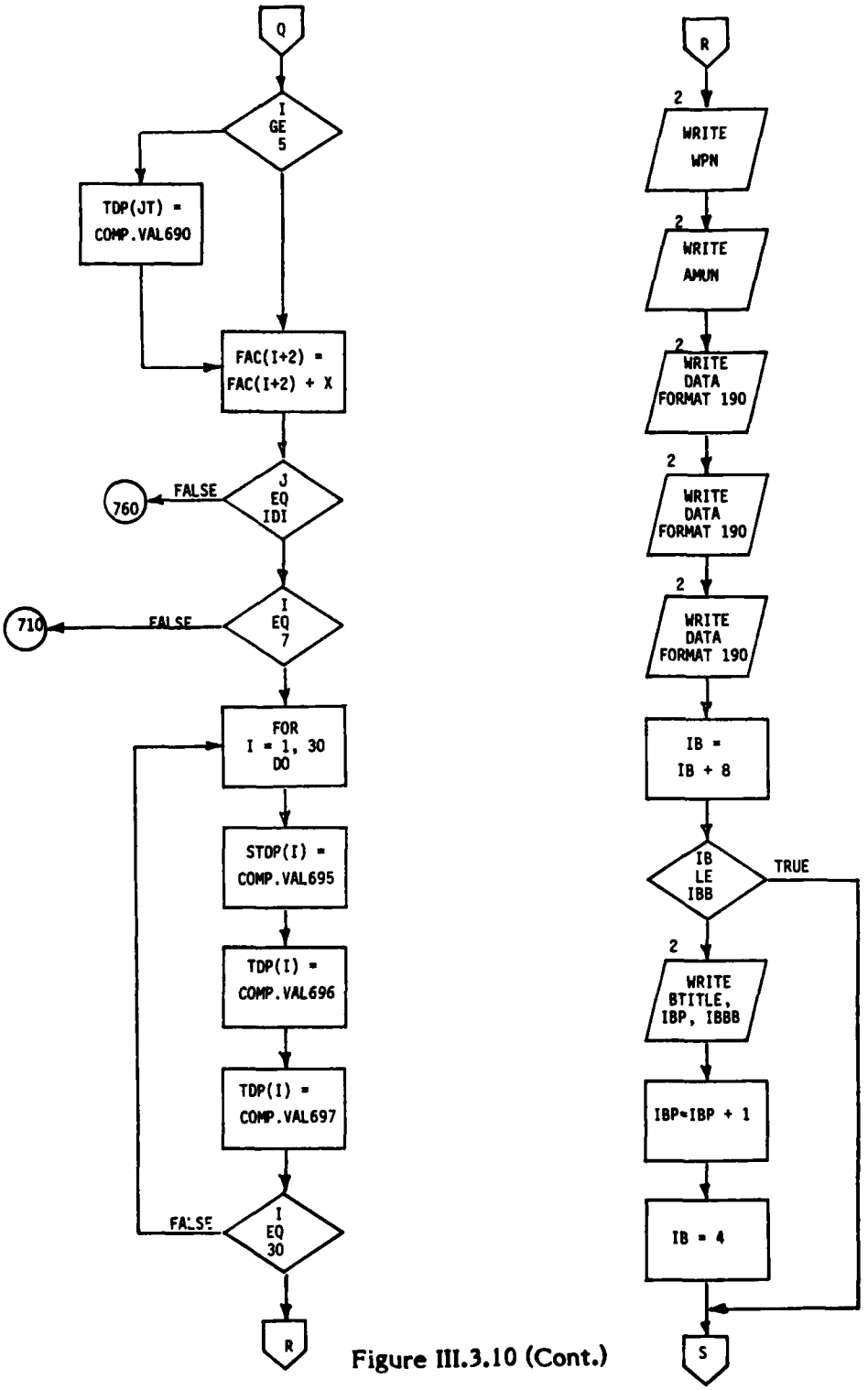


Figure III.3.10 (Cont.)

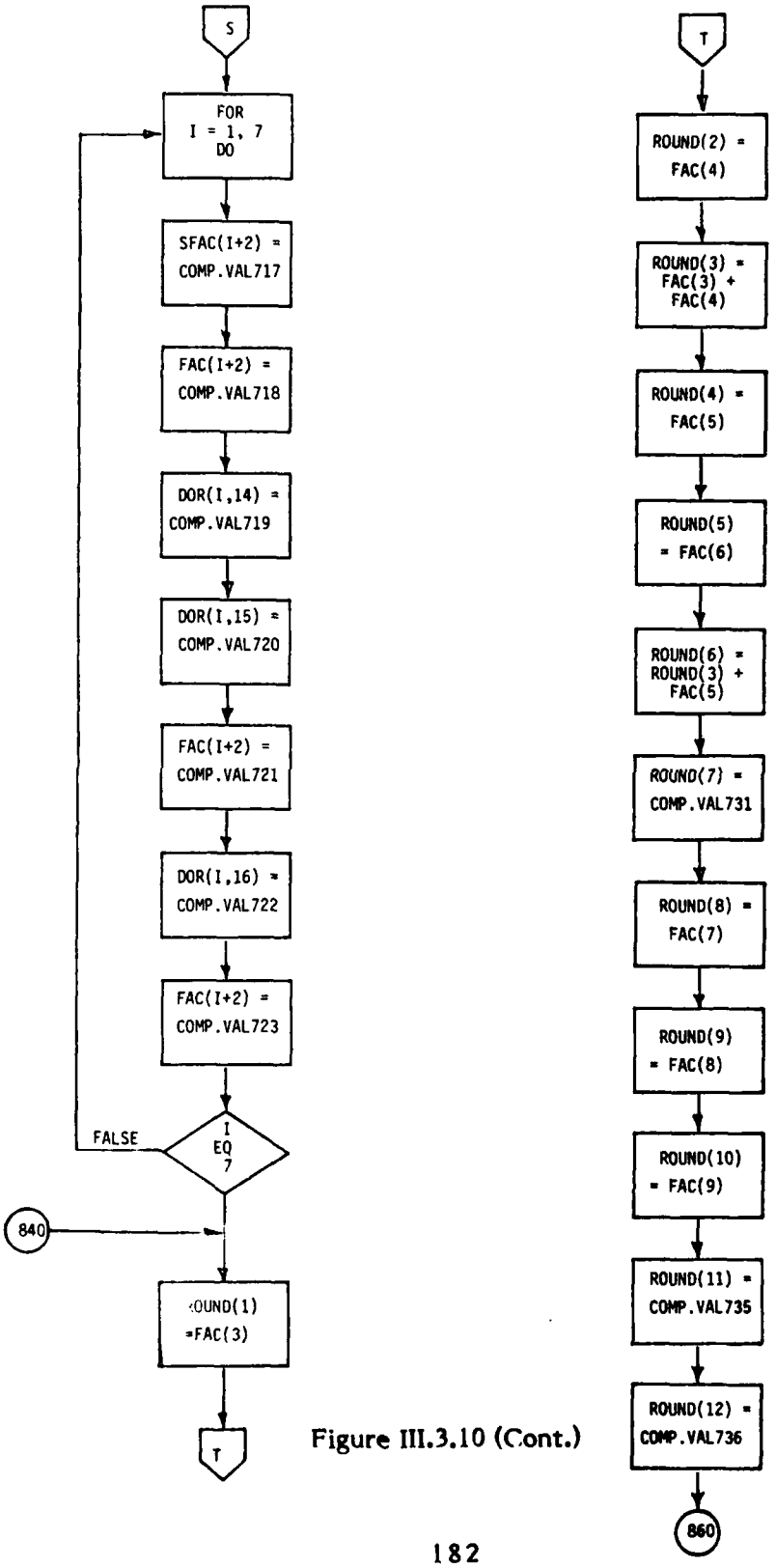


Figure III.3.10 (Cont.)

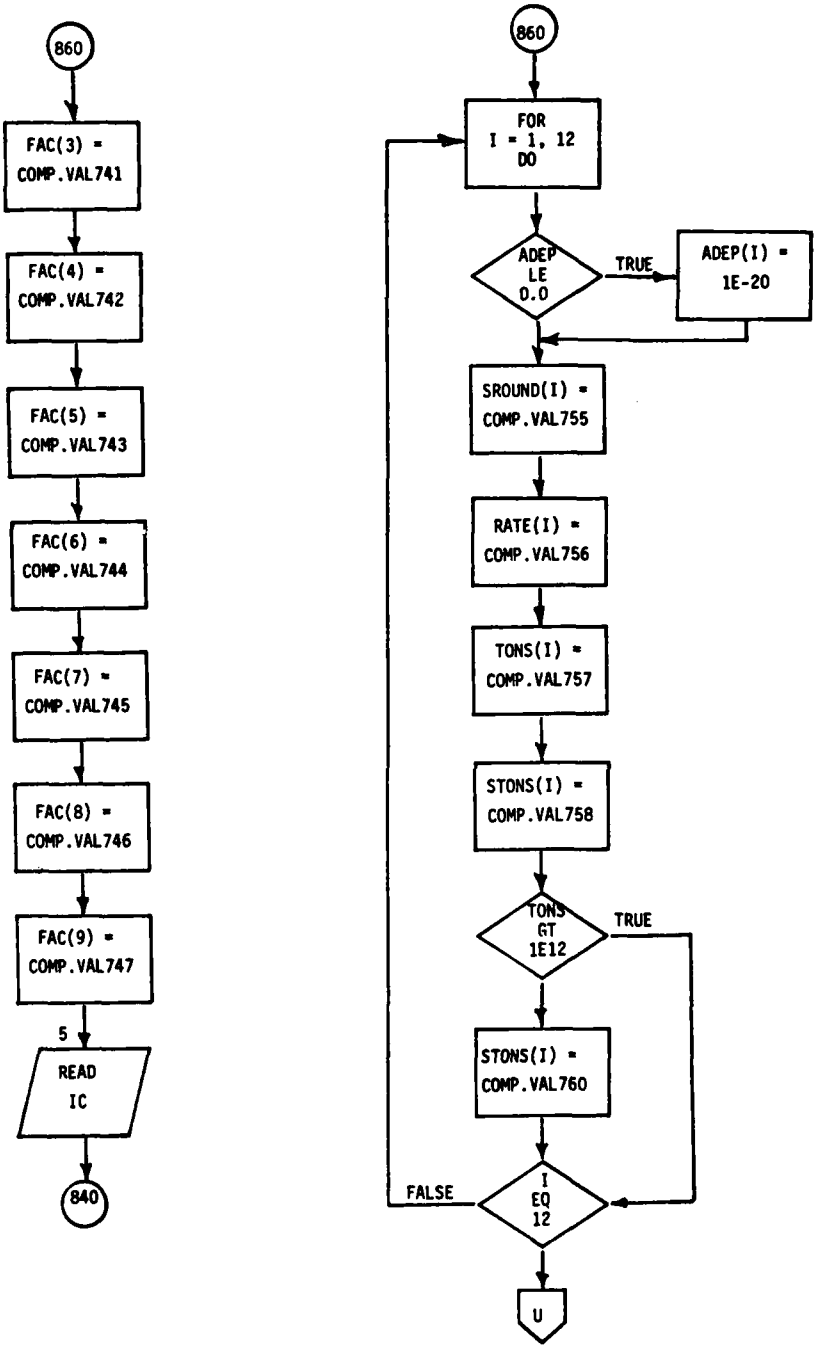


Figure III.3.10 (Cont.)

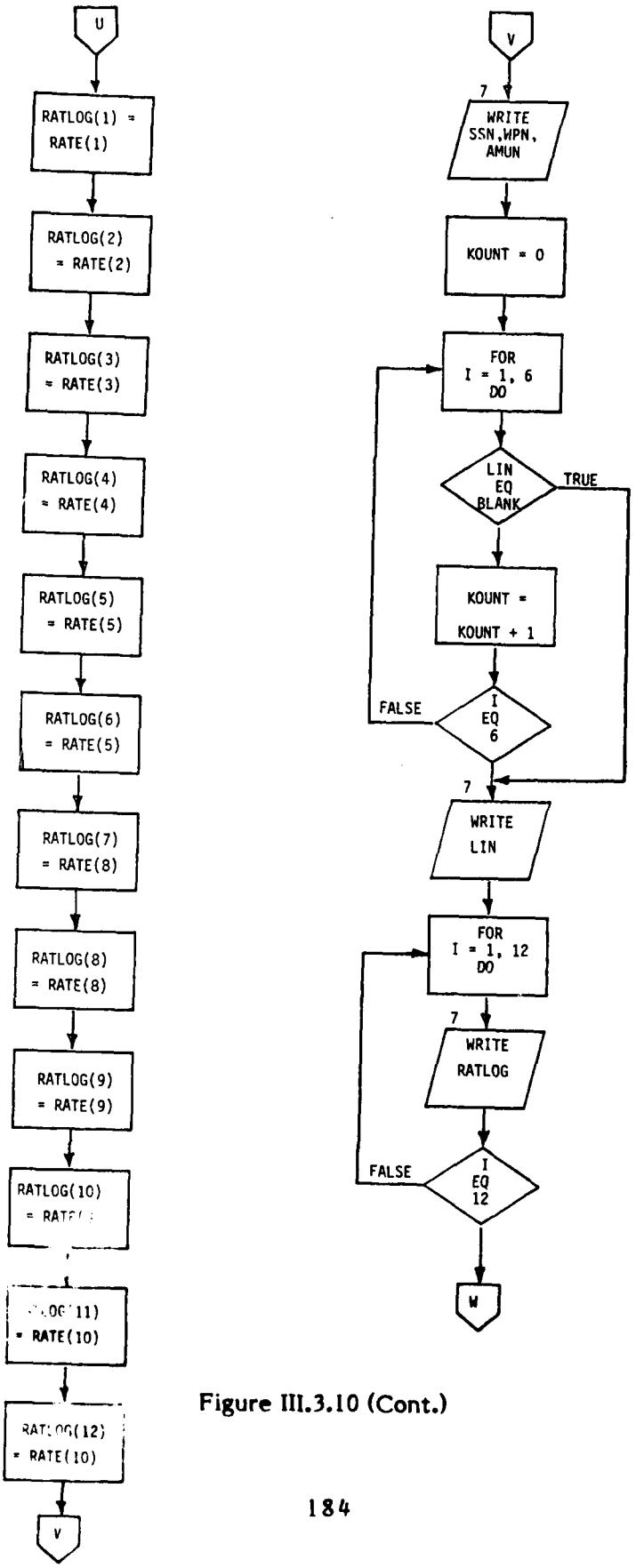


Figure III.3.10 (Cont.)

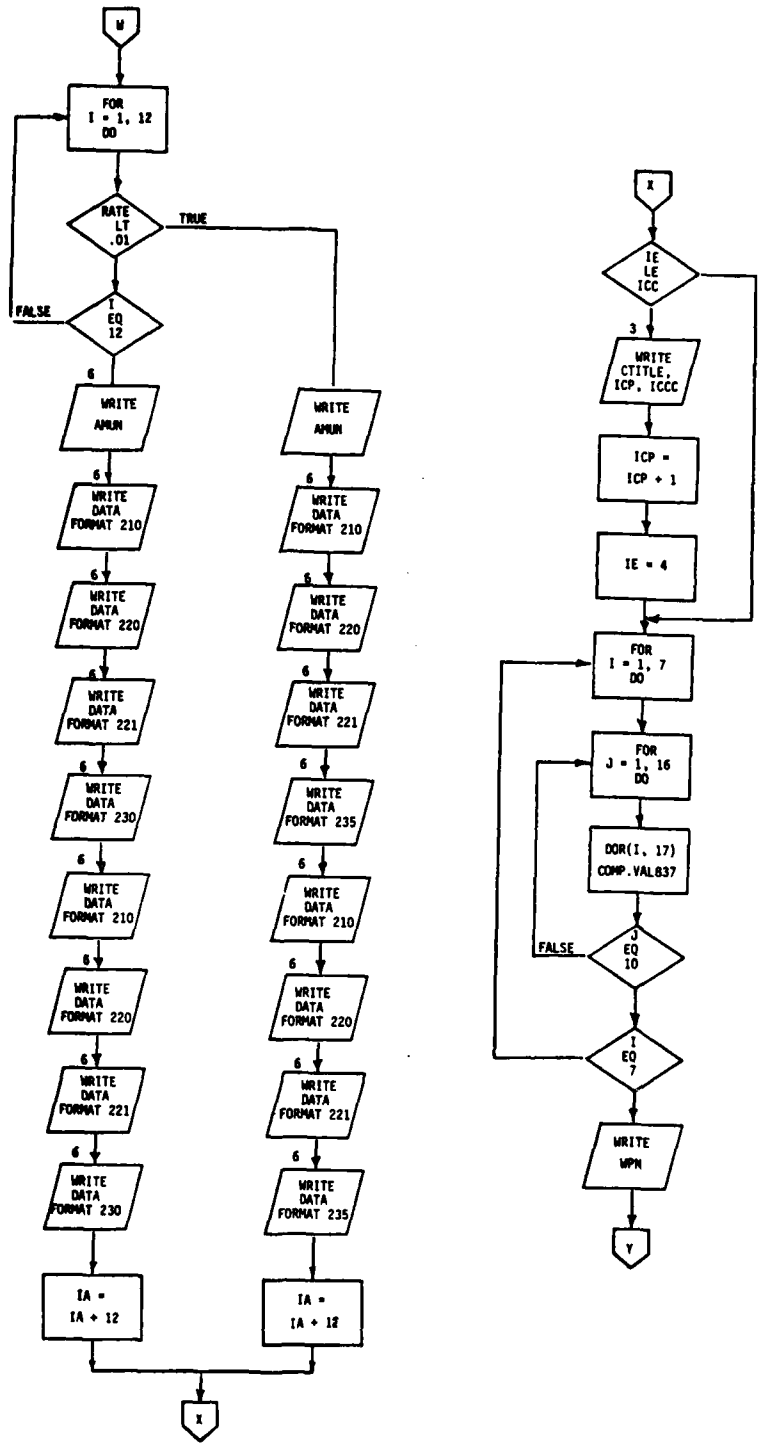


Figure III.3.10 (Cont.)

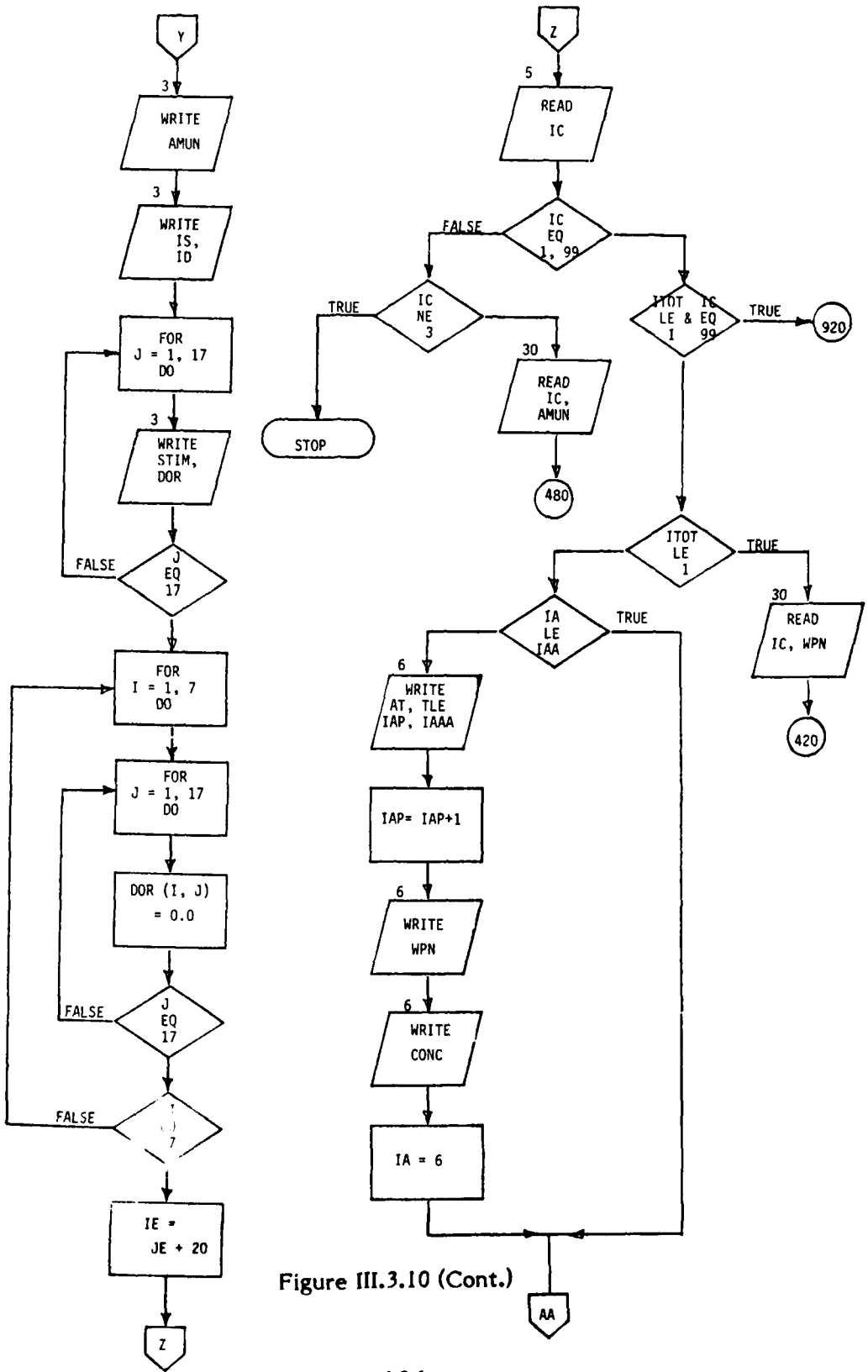


Figure III.3.10 (Cont.)

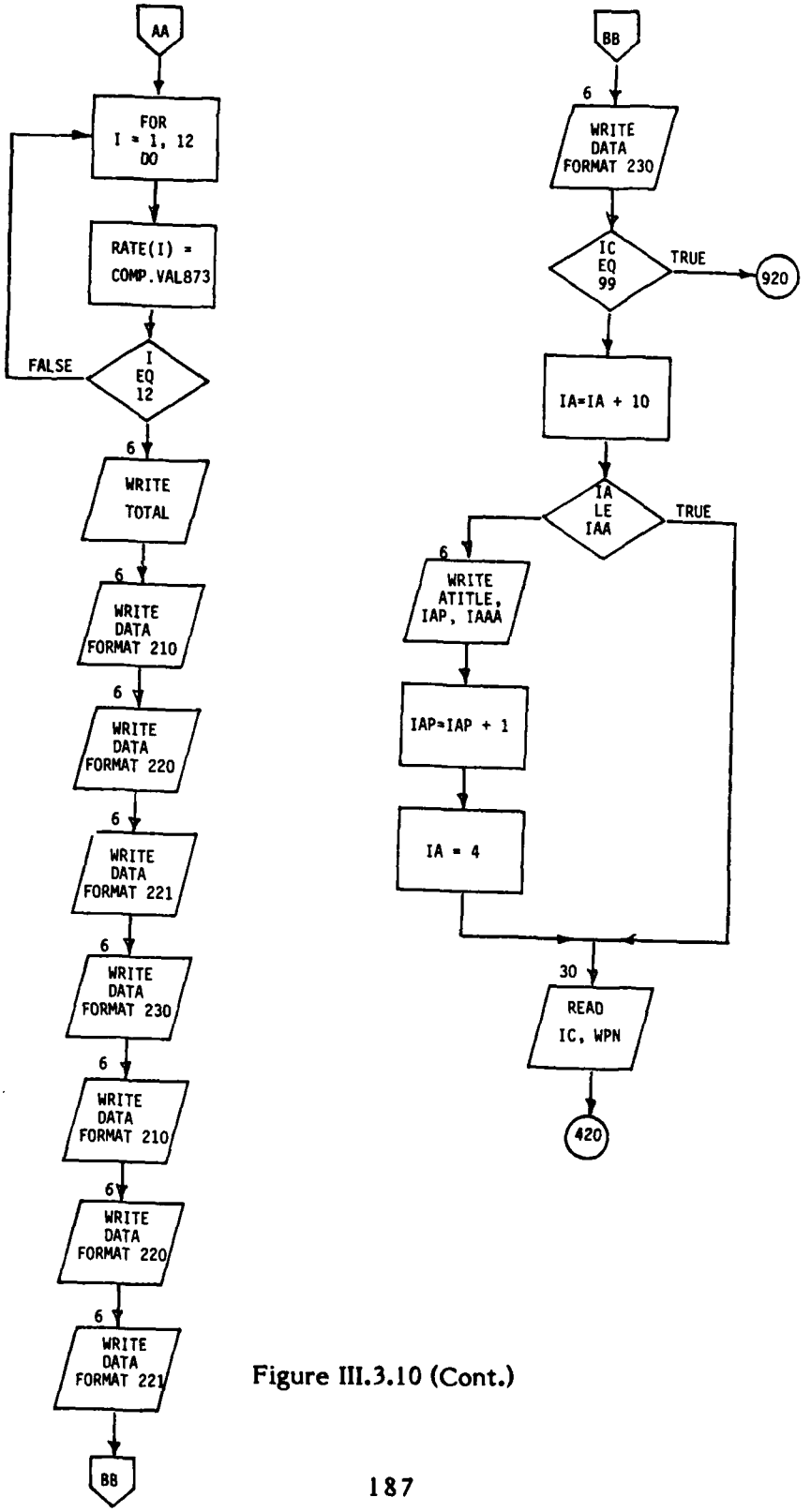


Figure III.3.10 (Cont.)

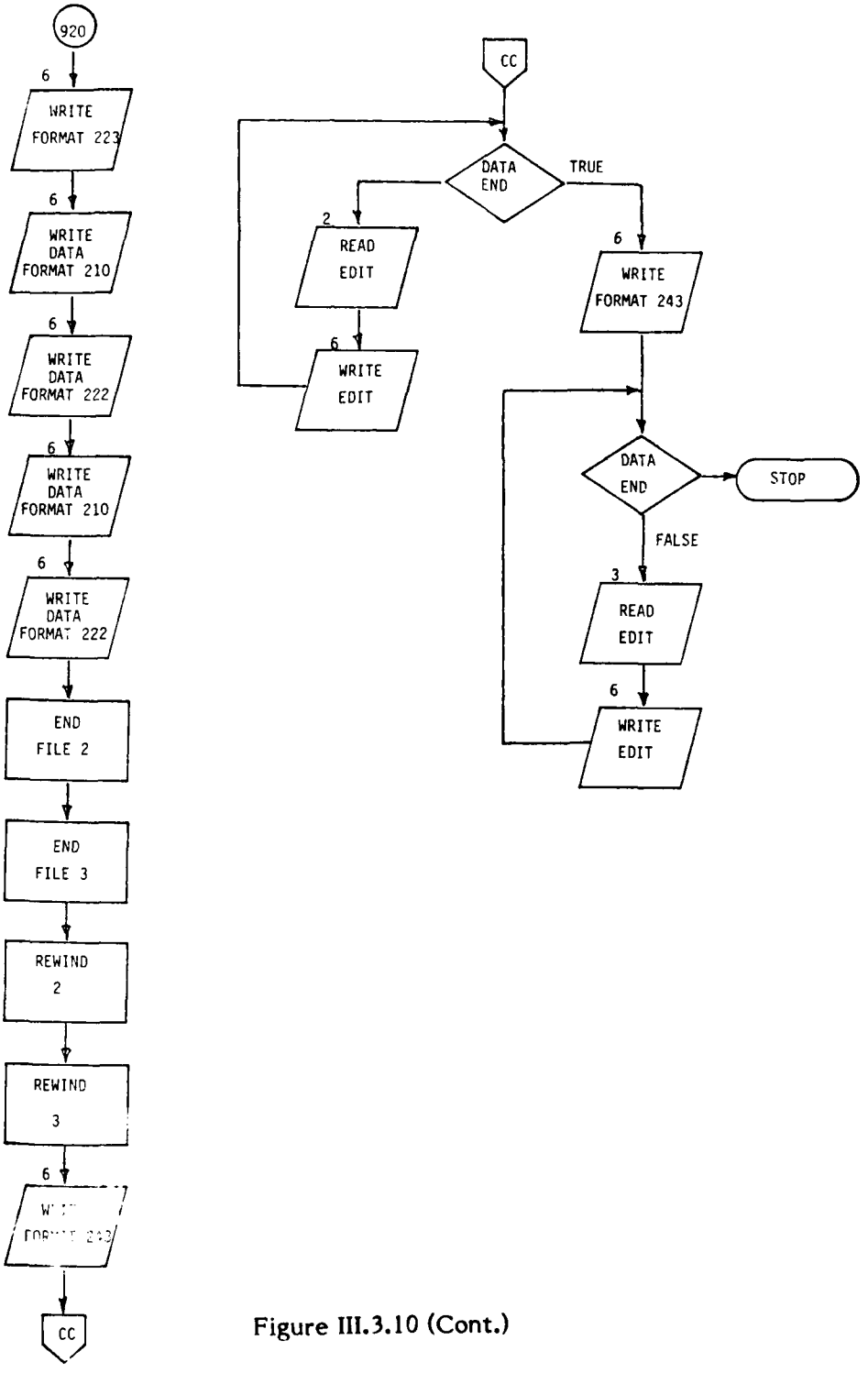


Figure III.3.10 (Cont.)

```
UNCLASSIFIED*LIFRANK(1).REPORT86
      1      C*****************************************************************      1
      2      C*                                                               *      2
      3      C*                        REPORT WRITER                          *      3
      4      C*                ASSESSES BASIC LOAD LOSSES AGAINST             *
      5      C*                30 PERCENT OF M AND F KILLS                    *
      6      C*                                                               *      4
      7      C*****************************************************************      5
      8      C                                                                       6
      9      C  1.  THIS PROGRAM IS USED TO DEVELOP AMMO REQUIREMENTS AND RATES
     10      C      GIVEN STYLIZED EXPENDITURES PLUS THE OUTPUT OF THE THEATER
     11      C      RATES MODEL (TRM).
     12      C  2.  THE PROGRAM READS THE FOLLOWING FILES (IN ORDER):
     13      C    A.  TRM OUTPUT.  THIS FILE IS READ ON UNIT 10 (IE PRIOR TO
     14      C        WXQT THERE MUST BE A "BUSE 10.,TRM OUTPUT FILE" CONTROL
     15      C        STATEMENT).  THIS FILE SHOULD HAVE 6840 LINES FOR A 180 DAY
     16      C        WAR OR 38 LINES PER DAY.  THE 38 LINES CONTAIN THE FOLLOWING
     17      C        DATA:    (THE VARIABLES LISTED ARE FROM TRM)
     18      C       (1)  IN THE FIRST 30 LINES, 15 SETS OF DATA ARE LISTED IN TWO
     19      C            LINE PAIRS.  THE FIRST LINE IS FOR BLUE EQUIPMENT TYPES 1
     20      C            THRU 15 AND THE SECOND LINE IS BLUE EQUIPMENT TYPES 16 THRU 30.
     21      C       (2)  LINES 1 & 2 BLUDEP = BLUE DEPLOYMENTS TO THE THEATER TODAY
     22      C       (3)  LINES 3 & 4 BREPA = BLUE REPLACEMENTS TO THE THEATER TODAY
     23      C       (4)  LINES 5 & 6 BRTD = BLUE RETURNS TO DUTY (FROM LOWER LEVEL MAINT-
     24      C            ENANCE) TODAY
     25      C       (5)  LINES 7 & 8 BREPD = BLUE REPLACEMENTS (FROM REPLACEMENT POOL)
     26      C            ISSUED TODAY
     27      C       (6)  LINES 9 & 10 BRTR = BLUE RETURNS TO REPLACEMENT POOL TODAY FROM
     28      C            HIGHER LEVEL MAINTENANCE
     29      C       (7)  LINES 11 & 12 BASS = BLUE SURVIVING ASSETS TODAY
     30      C       (8)  LINES 13 & 14 BLUON = BLUE ON LINE EQUIPMENT (COMMITTED) TODAY
     31      C       (9)  LINES 15 THRU 22 BATT =  NUMBER OF BLUE EQUIPMENT "K" KILLED TODAY
     32      C            (NON-REPAIRABLE) BY POSTURE = 2 LINES FOR EACH POSTURE (DELAY,
     33      C            DEFENSE INTENSE, DEFENSE LIGHT, AND ATTACK)
     34      C      (10)  LINES 23 THRU 30 BAMT =  NUMBER OF BLUE EQUIPMENT "M" KILLED
     35      C            (REPAIRABLE) TODAY  BY POSTURE = 2 LINES FOR EACH POSTURE (DELAY,
     36      C            DEFENSE INTENSE, DEFENSE LIGHT, AND ATTACK)
     37      C      (11)  LINES 31 THRU 38 ESDAY =  DAILY ESD'S BY POSTURE AS IN 10 ABOVE
     38      C            THE FIRST LINE HAS ESD'S 1 THRU 20 AND THE SECOND LINE HAS
     39      C            ESD'S 21 THRU 40.
     40      C    B.  SAMPLE DAY INPUT.  THIS IS A 180 LINE FILE CONTAINING
     41      C        THE SAMPLE NUMBER USED FOR EACH DAY OF A 180 DAY WAR.  THE
     42      C        FORMAT IS I2 (COLUMNS 1 & 2).  THIS FILE IS ADDED (WADD)
     43      C        FOLLOWING THE WXQT STATEMENT.
     44      C    C.  TITLE INPUT.  THIS FILE CONTAINS THE FOLLOWING INFO WHICH IS
     45      C        ADDED (WADD) FOLLOWING THE SAMPLE DAY INPUT:
     46      C       (1)  THE THREE TITLES FOR THE THREE REPORTS GENERATED BY
     47      C            MODEL.  TWO LINES EACH (IN FORMAT 12A6/5A6) FOR TOTAL
     48      C            OF 6 LINES.
     49      C       (2)  SEA LOSS DATA.  SEE VARIABLE LISTINGS-FORMAT 7F5.0
     50      C       (3)  NUMBER OF LINES PER PAGE FOR EACH REPORT.  FORMAT 3I2
     51      C       (4)  TOTAL NUMBER OF PAGES IN EACH REPORT.  FORMAT 3I2
     52      C    D.  AMMO EXPENDITURES INPUT.  THIS FILE IS MADE UP OF A
     53      C        SET OF DATA LINES (3 OR MORE) FOR EACH WEAPON SYSTEM AND
     54      C        MUNITION .  THE DATA AND FORMATS ARE AS FOLLOWS (IT IS
     55      C        ADDED (WADD) FOLLOWING THE TITLE INPUT):
     56      C     CARD TYPE 1 = WEAPON CARD = ONE REQUIRED                          9
```

Figure III.3.11

```
C      CC            FORMAT    DATA                                                  10
C      1-2           I2        1 (IC)                                                11
C      3-42          10A4      WEAPON NAME (WPN)                                     12
C                                                                                    13
C      CARD TYPE 2 - DEPLOYMENT CARD - ONE REQUIRED                                  14
C      CC            FORMAT    DATA                                                  15
C      1-2           I2        2 (IC)                                                16
C      3-10          F8.0      0-DAY (DEP(1))                                        17
C      11-18         F8.0      1-15  (DEP(2))                                        18
C      19-26         F8.0      16-30 (DEP(3))                                        19
C      27-34         F8.0      31-60 (DEP(4))                                        20
C      35-42         F8.0      61-90 (DEP(5))                                        21
C      43-50         F8.0      91-120  (DEP(6))                                      22
C      51-58         F8.0      121-150 (DEP(7))                                      23
C      59-66         F8.0      151-180 (DEP(8))                                      24
C      67            I1        PRINT INDICATOR  (IPRT)                               25
C                                 1 = DO NOT PRINT DEPLOYMENT                        26
C                                 0 = PRINT DEPLOYMENT                               27
C                                                                                    28
C      CARD TYPE 3 - MUNITIONS CARD - ONE REQUIRED                                   29
C      CC            FORMAT    DATA                                                  30
C      1-2           I2        3 (IC)                                                31
C      3-32          5A6       MUNITION NAME (AMUN)                                  32
C      33            I1        BUSINESS ROUND INDICATOR  (IBUS)                      33
C                                 1 = BUSINESS ROUND                                 34
C                                 0 = NONBUSINESS ROUND                              35
C      34            I1        COMPUTATION METHOD (IM)                               36
C                                 0 = NORMAL METHOD                                  37
C                                 1 = USE THE RATES FROM THE FACTORS CARD            38
C      41-50         F10.0     WEIGHT OF MUNITION IN POUNDS                          3
C                                                                                    39
C*****************************************************************
C  IMMEDIATELY FOLLOWING EACH TYPE 3 CARD, THERE MUST BE A CARD
C  CONTAINING THE SSN(SPECIAL STUDY NUMBER) AND ALL LIN'S (LINE
C  ITEM NUMBERS) FOR THE MUNITION IDENTIFIED ON THE TYPE 3 CARD.
C*****************************************************************
C
C      CARD TYPE 4 - FACTORS CARD - ONE REQUIRED                                     40
C      CC            FORMAT    DATA                                                  41
C      1-2           I2        4 (IC)                                                42
C      3-7           F5.0      LOG LOSS FACTOR (FAC(1))                              43
C      8-12          F5.0      MOI FACTOR (FAC(2))                                   44
C      13            1X                                                              45
C      14-19         F6.0      FAC(3) DAYS 1-15                                      46
C      20            1X                                                              47
C      21-26         F6.0      FAC(4) DAYS 16-30                                     48
C      27            1X                                                              49
C      28-33         F6.0      FAC(5) DAYS 31-60                                     50
C      34            1X                                                              51
C      35-40         F6.0      FAC(6) DAYS 61-90                                     52
C      41            1X                                                              53
C      42-47         F6.0      FAC(7) DAYS 91-120                                    54
C      48            1X                                                              55
C      49-54         F6.0      FAC(8) DAYS 121-150                                   56
C      55            1X                                                              57
C      56-6          F6.0      FAC(9) DAYS 151-180                                   58
C      62            1X                                                              59
```

Figure III.3.11 (Cont.)

```
C     63-67          I5          SCALE FACTOR =  10**ISCALE
C
C     CARD TYPE 5 - STYLIZED LOSSES CARD - ZERO OR MORE REQUIRED
C     CC             FORMAT      DATA
C     1-2            I2          5 (IC)
C     3-5            3X
C     6-10           I5          SYSTEM NUMBER (IT)
C     11-20          F10.0       STYLIZED LOSSES PER SYSTEM - DE  (SLPS(1))
C     21-30          F10.0       STYLIZED LOSSES PER SYSTEM - DI  (SLPS(2))
C     31-40          F10.0       STYLIZED LOSSES PER SYSTEM - DL  (SLPS(3))
C     41-50          F10.0       STYLIZED LOSSES PER SYSTEM - AT  (SLPS(4))
C     51-60          F10.0       ZERO= -THE NUMBER OF ROUNDS TO ZERO
C
C     CARD TYPE 6 - STYLIZED EXPENDITURE CARD - ONE TO FIFTY REQUIRED
C     CC             FORMAT      DATA
C     1-2            I2          6 OR 99 (IC)  99 = LAST CARD TYPE 6
C     3-5            I3          SAMPLE NUMBER (ISAM) 999 = FOR ALL SAMPLES
C     6-10           I5          ESD NUMBER (IESD)
C     11-20          F10.0       STYLIZED EXPENDITURE - DE (SE(1))
C     21-30          F10.0       STYLIZED EXPENDITURE - DI (SE(2))
C     31-40          F10.0       STYLIZED EXPENDITURE - DL (SE(3))
C     41-50          F10.0       STYLIZED EXPENDITURE - AT (SE(4))
C
C*****************************************************************
C
C     VARIABLES
C
C     ADEP(I)        AVERAGE DEPLOYMENT FOR I WHERE
C                      1 = 1-15
C                      2 = 16-30
C                      3 = 1-30
C                      4 = 31-60
C                      5 = 61-90
C                      6 = 31-90
C                      7 = 1-90
C                      8 = 91-120
C                      9 = 121-150
C                     10 = 151-180
C                     11 = 91-180
C                     12 = 1-180
C
C     AMUN(I)        THE ARRAY OF THE MUNITION NAME
C
C     ATITLE(I)      THE TITLE FOR THE MAIN REPORT
C
C     BTITLE(I)      THE TITLE FOR THE THREE-DAY PILE REPORT
C
C     CONC(I)        HOLLERITH CONSTANT ='CONTINUED'
C
C     CTITLE(I)      THE TITLE FOR THE DISTRIBUTION OF REQUIREMENTS
C
C     DAYS(I)        NO OF DAYS IN PERIOD I WHERE I IS SAME AS FOR ADEP(I)
C
C     DEP(I)         DEPLOYMENT FOR EACH PERIOD
C                       INPUT ON CARD TYPE 4
C
C     DUM(I,J)       DISTRIBUTION OF REQUIREMENTS FOR TIME PERIOD J
```

Figure III.3.11 (Cont.)

```
171        C                    1 = 1-15
172        C                    2 = 16-30
173        C                    3 = 31-60
174        C                    4 = 61-90
175        C                    5 = 91-120
176        C                    6 = 121-150
177        C                    7 = 151-180
178        C                AND WHERE J IS THE SOURCE OF THE REQUIREMENT
179        C                    1 = THE AMOUNT INPUT ON THE FACTORS CARD
180        C                    2 = COMBAT LOSSES FOR DE
181        C                    3 = COMBAT LOSSES FOR DI
182        C                    4 = COMBAT LOSSES FOR DL
183        C                    5 = COMBAT LOSSES FOR AT
184        C                    6 = ZEROING BY DEPLOYMENTS
185        C                    7 = ZEROING BY RETURN TO DUTY
186        C                    8 = ZEROING BY REPLACEMENTS
187        C                    9 = ZEROING BY RETURN TO THE REPLACEMENT POOL
188        C                   10 = FIRING IN DE
189        C                   11 = FIRING IN DI
190        C                   12 = FIRING IN DL
191        C                   13 = FIRING IN AT
192        C                   14 = H&I FIRING
193        C                   15 = LOG LOSSES
194        C                   16 = SEA LOSSES
195        C                   17 = TOTAL
196        C                                                              115
197        C     ESU(I,J,K)  ESU FOR DAY = I                              116
198        C                         ESU NUMBER = J                       117
199        C                         POSTURE = K                          118
200        C                           WHERE 1 = DE, 2 = DI, 3 = DL, 4 = AT 119
201        C                                                              120
202        C     ESL(I,J,K)  EQUIPMENT STYLIZED LOSSES WHERE              121
203        C                         3-DAY INCREMENT = I                  122
204        C                         EQUIPMENT NUMBER = J                 123
205        C                         POSTURE = K                          124
206        C                           WHERE 1 = DE, 2 = DI, 3 = DL, 4 = AT 125
207        C                                                              126
208        C     FAC(I)      THE FACTORS FROM CARD TYPE 4                 127
209        C                    THE ARRAY IS USED TO COMPUTE THE FILL FOR THE 128
210        C                    PERIODS. FAC(1)- -FAC(9) IS EITHER A FILL OR A 129
211        C                    RATE FOR THE PERIOD. THE COMPUTATIONAL METHOD 130
212        C                    FROM CARD TYPE 3 DETERMINES WHICH.        131
213        C                    IM = 0 MEANS FILL, IM = 1 MEANS RATE      132
214        C                                                              133
215        C     IA          COUNTER FOR THE NUMBER OF LINES THAT HAVE BEEN 134
216        C                   PRINTED ON A PAGE IN THE MAIN REPORT.      135
217        C                                                              136
218        C     IAA         INPUT VALUE FOR THE NUMBER OF LINES ON A PAGE IN THE 137
219        C                    MAIN REPORT                               138
220        C
221        C     IAAA        TOTAL NUMBER OF PAGES IN MAIN REPORT
222        C
223        C     IAP         PAGE COUNTER FOR THE MAIN REPORT
224        C                                                              139
225        C     IB          COUNTER FOR THE NUMBER OF LINES THAT HAVE BEEN 140
226        C                   PRINTED ON A PAGE IN THE THREE-DAY FILL REPORT. 141
227        C                                                              142
```

Figure III.3.11 (Cont.)

```
C     I88          INPUT VALUE FOR THE NUMBER OF LINES ON A PAGE IN THE
C                     THREE-DAY PILE REPORT
C
C     I8B8         TOTAL NUMBER OF PAGES IN THE 3-DAY PILE REPORT
C
C     I8P          PAGE COUNTER FOR THE 3-DAY PILE REPORT
C
C     I8US         INDICATOR THAT THE MUNITION IS A BUSINESS ROUND
C                      INPUT ON CARD TYPE 3
C
C     IC           THE CARD TYPE FOR THE INPUT DATA
C
C     ICC          INPUT VALUE FOR TH NUMBER OF LINES ON A PAGE IN THE
C                     DISTRIBUTION OF REQUIREMENTS REPORT
C
C     ICCC         TOTAL NUMBER OF PAGES IN THE DOR REPORT
C
C     ICP          PAGE COUNTER FOR THE DOR REPORT
C
C     IE           COUNTER FOR THE NUMBER OF LINES IN THE DOR REPORT
C
C     ID(I)        A CONSTANT ARRAY USED TO PRINT OUT THE DAY HEADINGS
C
C     II(I)        AN ARRAY TO PRINT THE HEADINGS FOR THE 3-DAY PILES.
C
C     IM           INDICATOR FOR THE COMPUTATION METHOD TO BE USED
C                      INPUT ON CARD TYPE 3
C
C     IPRT         PRINT INDICATOR FOR DEPLOYMENT
C                      1 = DO NOT PRINT DEPLOYMENT
C                      0 = PRINT DEPLOYMENT
C
C     ISCALE       THE SCALE FACTOR FROM CARD TYPE 4
C
C     IS(I)        A CONSTANT ARRAY USED TO PRINT OUT THE DAY HEADINGS
C
C     ISD(I)       THE SAMPLE TO APPLY FOR DAY I
C
C     ISVEC(I)     A VECTOR OF SAMPLE NUMBERS FOR A SINGLE MUNITION
C
C     IT           THE EQUIPMENT TYPE ON CARD TYPE 5
C
C     ITOT         INDICATOR TO DETERMINE WHETHER TO PRINT WEAPON TOTALS
C
C     JEVEC(I)     A VECTOR OF ESD NUMBERS FOR A SINGLE MUNITION
C
C     NATE(I)      THE RATE FOR THE PERIOD I WHERE
C                    I IS THE SAME AS FOR ADEP(I)
C
C     NOUND(I)     THE NUMBER OF ROUNDS FOR THE PERIOD I WHERE
C                    I IS THE SAME AS FOR ADEP(I)
C
C     SE(I)        STYLIZED EXPENDITURES BY POSTURE FROM CARD TYPE 6
C
C     SEALOSS(I)   THE FACTOR APPLIED FOR SHIPPING LOSSES FOR PERIOD
C                     I WHERE
C                          I = 1-15
```

Figure III.3.11 (Cont.)

```
C                          2 = 16-30
C                          3 = 31-60
C                          4 = 61-90
C                          5 = 91-120
C                          6 = 121-150
C                          7 = 151-180
C
C     SEVEC(J,I)     A VECTOR OF STYLIZED EXPENDITURES FOR A SINGLE
C                      MUNITION BY POSTURE J.
C
C     SFAC(I)        THE SUM OF THE FAC ARRAY. IT IS USED TO COMPUTE THE
C                        SUM OF THE BUSINESS ROUNDS FOR THE H&I FACTOR.
C
C     SLPS(I)        STYLIZED LOSSES PER SYSTEM BY POSTURE ON CARD TYPE 5
C
C     SROUND(I)      THE SUM OF THE ROUND(I) ARRAY.
C
C     STOP(I)        THE SUM OF THE TOP ARRAY. IT IS USED TO COMPUTE THE
C                        SUM OF THE BUSINESS ROUNDS FOR THE H&I FACTOR.
C
C     STONS(I)        WEIGHT OF THE PILE FOR A SYSTEM BY PERIOD IN TONS
C
C     STIM(J)        THE SOURCE OF THE REQUIREMENT LABELS.
C                        J IS THE SAME AS FOR DOR(I,J)
C
C     TOEP(I)        TOTAL DEPLOYMENT FOR PERIOD I WHERE
C                      I IS THE SAME AS FOR ADEP(I)
C
C     TOP(I)         THREE-DAY PILES FOR PERIOD I WHERE
C                        1 = 1-3, 2 = 4-6, 3 = 7-9, ETC.
C
C     TONS(I)        WEIGHT OF THE PILE BY PERIOD IN TONS
C
C     TOTAL(I)       HOLLERITH CONSTANT ='WEAPONTOTAL'
C
C     TSTONS(I)      THE TOTAL TONNAGE FOR ALL MUNITIONS BY PERIOD
C
C     WPN(I)         THE ARRAY OF THE WEAPON NAME
C
C     WEIGHT         WEIGHT OF THE MUNITION IN POUNDS/ROUND
C
C     ZE(I,J)        ZEROING REQUIREMENTS FOR
C                            3-DAY INCREMENT = I
C                            EQUIPMENT NUMER = J
C
C     ZERO           THE NUMBER OF ROUNDS REQUIRED TO ZERO THE WPN.
C
C     ZZE(I,J,K)     THE ZEROING REQUIREMENT WHERE I IS THE PERIOD
C                              1 = 1-15
C                              2 = 16-30
C                              3 = 31-60
C                              4 = 61-90
C                              5 = 91-120
C                              6 = 121-150
C                              7 = 151-180
C                        AND J IS THE STIMULUS
C                           1 = DEPLOYMENT
```

Figure III.3.11 (Cont.)

```
C                          2 = RETURN TO DUTY                                    233
C                          3 = REPLACEMENT                                       234
C                          4 = RETURN TO REPLACEMENT POOL                        235
C                        AND K IS THE EQUIPMENT TYPE.                            236
C                                                                                237
C*****************************************************************************  238
      DIMENSION ESD(100,40,4),ESL(60,30,4),ZE(60,30),ZZE(7,4,30),               239
     1ATITLE(17),BTITLE(17),SEALOS(7),CONC(2),NPN(10),DEP(6),
     2ADEP(12),TDEP(12),ID(7),IS(7),AMUN(5),FAC(9),ROUND(12),SFAC(8),           241
     3SLPS(4),TOP(30),ISVEC(50),JEVEC(50),SEVEC(9,50),RATE(12),STOP(30),        242
     4ISO(100),SE(4),II(60),DAYS(12),SROUND(12),TOTAL(2),DUR(7,17),             24
     5STIM(17),CTITLE(17),EDIT(22),TONS(12),STONS(12),ISTONS(12)
      DIMENSION ESLT(60,30,4),LIN(6),RATLOG(12)
      DATA CONC/6H(CONTI,6HNUED) /                                              244
      DATA ID/15,30,60,90,120,150,180/                                          246
      DATA DAYS/2*15.,3*30.,60.,90.,3*30.,90.,180./                             247
      DATA IS/1,16,31,61,91,121,151/                                            248
      DATA TOTAL/6HWEAPON,6HTOTALS/                                             249
      DATA STIM/6HFAC-IN,6HLOS-DE,6HLOS-DI,6HLOS-DL,6HLOS-AT,6HZE-DEP,          249
     1          6HZE-RTD,6HZE-REP,6HZL-RTN,6HLXP-DE,6HLXP-DI,6HLXP-DL,          249
     2          6HLXP-AT,6HMI    ,6HLOG   ,6HSLA   ,6HTOTAL /
C                                                                               250
C     INPUT FORMATS                                                             251
C                                                                               252
10    FORMAT (20F5.2)                                                           253
20    FORMAT (15F8.1)                                                           254
30    FORMAT (12A6/5A6)                                                              255
40    FORMAT (/F5.0)                                                            256
50    FORMAT (I2,10A4)                                                          257
60    FORMAT (I2,8F8.0,I1)                                                      258
70    FORMAT (I2,5A6,2I1,6X,F10.0)                                               2
80    FORMAT (I2,2F5.0,7(1X,F6.0),1X,I5)
90    FORMAT (I2,3X,I5,5F10.0)                                                  26
100   FORMAT (I2,I3,I5,4F10.0)                                                  262
110   FORMAT (3I2)                                                              26
C                                                                               264
C     OUTPUT FORMATS                                                            265
C                                                                               266
120   FORMAT (1H1,17A6,5X,'( ',I2,' OF ',I2,' )'///)
130   FORMAT (1H ,10A4)                                                         268
140   FORMAT (26X,'PERIODS (DAYS):',9X,'0-DAY',6(4X,I3,'-',I3))                 26
150   FORMAT (24X,'TOTAL DEPLOYMENT:',4X,7(F10.0,1X))
160   FORMAT (22X,'AVERAGE DEPLOYMENT:',14X,6(1X,F10.0)/)
170   FORMAT (1H ,5A6)
180   FORMAT (24X,'TOTAL DEPLOYMENT:',14X,6(1X,F10.0))
190   FORMAT (1H ,'PERIOD (DAYS):',10(5X,I2,'-',I2),/'      QUANTITY:',          274
     1(1X,10F10.0)
200   FORMAT (1H ,5X,5A6)                                                       276
210   FORMAT (27X,'PERIOD (DAYS):',14X,6(4X,I3,'-',I3))
220   FORMAT (34X,'QUANTITY:',14X,6(1X,F10.0))
221   FORMAT (32X,' TONNAGE:',14X,6(1X,F10.2))
222   FORMAT (27X,'TOTAL TONNAGE:',14X,6(1X,F10.2)/)
223   FORMAT (48X,'SUMMARY OF TONNAGE FOR ALL MUNITIONS')
230   FORMAT (36X,'RATE:',14X,6(1X,F10.2)/)
235   FORMAT (30X,'RATE:',14X,6(1X,F10.3)/)
240   FORMAT (1H ,5X,A6,2X,A6)                                                  280
241   FORMAT(1H ,34X,A6,':',4X,7F10.0)
```

Figure III.3.11 (Cont.)

```
399       292   FORMAT(28X,'PERIOD (DAYS):',4X,7(3X,I3,'-',I3))
400       293   FORMAT(1H1)
401       294   FORMAT(22A6)
402       C                                                                  281
403       C     COMPUTE THE VALUES FOR II                                    282
404       C                                                                  283
405             DO 250 I=1,59,2                                              284
406             II(I)=1+(I-1)*3/2                                            285
407             J=I+1                                                        286
408             II(J)=J*3/2                                                  287
409       250   CONTINUE                                                     288
410       C                                                                  289
411       C     READ TNM INPUT                                               290
412       C                                                                  291
413             DO 400 I=1,180                                               292
414             JT=.9+FLOAT(I)/3.
415             DO 340 K=1,5                                                 29
416             KK=K
417             READ (10,20) (TOP(J),J=1,15)                                 295
418             READ (10,20) (TOP(J),J=16,30)                                296
419             IF(K.EQ.2)GO TO 340
420             DO 260 J=1,30                                                297
421             ZE(JT,JI)=ZE(JT,JI)+TOP(J)                                   298
422       260   CONTINUE                                                     299
423             JI=(I-1)/15+1                                                300
424             GO TO (320,320,320,270,280,280,290,290,300,300,310,310), JI  301
425       270   JI=3                                                         302
426             GO TO 320                                                    303
427       280   JI=4                                                         304
428             GO TO 320                                                    305
429       290   JI=5                                                         306
430             GO TO 320                                                    307
431       300   JI=6                                                         308
432             GO TO 320                                                    309
433       310   JI=7                                                         310
434       320   IF(K.GE.2)KK=K-1
435             DO 330 J=1,30                                                31
436             ZZE(JI,KK,J)=ZZE(JI,KK,J)+TOP(J)
437       330   CONTINUE                                                     313
438       340   CONTINUE                                                     314
439             DO 350 J=1,4                                                 315
440             READ (10,20) DUMMY                                           316
441       350   CONTINUE                                                     317
442             DO 370 K=1,4                                                 318
443             READ (10,20) (TOP(J),J=1,15)                                 319
444             READ (10,20) (TOP(J),J=16,30)                                320
445             DO 360 J=1,30                                                321
446             ESL(JT,J,K)=ESL(JT,J,K)+TOP(J)                               322
447       360   CONTINUE                                                     323
448       370   CONTINUE                                                     324
449       C       READ LINES 29 TO 30  M AND F KILLS                         32
450             DO 375 K=1,4                                                 31
451             READ (10,20) (TOP(J),J=1,15)                                 319
452             READ (10,20) (TOP(J),J=16,30)                                320
453             DO 376 J=1,30                                                32
454       376   ESLT(JT,J,K)=ESLT(JT,J,K)+TOP(J)
455       375   CONTINUE                                                     32
```

Figure III.3.11 (Cont.)

```
      DO 390 K=1,9
      READ (10,10) (ESD(I,J,K),J=1,20)
      READ (10,10) (ESD(I,J,K),J=21,40)
  390 CONTINUE
  400 CONTINUE
      DO 410 I=1,100
      READ (5,50) ISD(I)
  410 CONTINUE
C
C     READ TITLE AND SEALOSSES
C
      READ (5,30) ATITLE
      READ (5,30) BTITLE
      READ (5,30) CTITLE
      READ (5,40) SEALOS
      READ (5,110) IAA,IBB,ICC
      READ (5,110) IAAA,IBBB,ICCC
      IAP=1
      IBP=1
      ICP=1
      DO 412 I=1,12
  412 TSTONS(I)=0.0
C
C     THE MODEL IS NOW INITIALIZED
C
C     WRITE TITLES
C
      WRITE (6,120) ATITLE,IAP,IAAA
      IAP=IAP+1
      IA=9
      WRITE  (2,120) BTITLE,IBP,IBBB
      IBP=IBP+1
      IB=9
      WRITE  (3,120) CTITLE,ICP,ICCC
      ICP=ICP+1
      IC=9
C
C     READ CARD TYPE 1
C
      READ (5,50) IC,NPN
  420 DO 430 I=1,10
      SEAC(I)=0.0
  430 CONTINUE
      DO 440 I=1,30
      STOP(I)=0.0
  440 CONTINUE
      DO 450 I=1,12
      SHOUND(I)=0.0
      STONS(I)=0.0
  450 CONTINUE
      ITOT=0
      IF (IA.LE.IAA) GO TO 460
      WRITE (6,120) ATITLE,IAP,IAAA
      IAP=IAP+1
      IA=9
  460 CONTINUE
      WRITE (6,130) NPN
```

Figure III.3.11 (Cont.)

```
513             IA=I. -1                                                        372
514       C                                                                     374
515       C     READ CARD TYPE 2                                                375
516       C                                                                     376
517             READ (5,60) IC,DEP,IPRT                                         377
518       C                                                                     378
519       C     COMPUTE DEPLOYMENTS                                             379
520       C                                                                     380
521             TDEP(1)=DEP(1)+DEP(2)                                           381
522             TDEP(2)=TDEP(1)+DEP(3)                                          382
523             TDEP(3)=TDEP(2)                                                 383
524             TDEP(4)=TDEP(3)+DEP(4)                                          384
525             TDEP(5)=TDEP(4)+DEP(5)                                          385
526             TDEP(6)=TDEP(4)                                                 38
527             TDEP(7)=TDEP(5)                                                 38
528             TDEP(8)=TDEP(7)+DEP(6)                                          3c
529             TDEP(9)=TDEP(8)+DEP(7)                                          389
530             TDEP(10)=TDEP(9)+DEP(8)                                         390
531             TDEP(11)=TDEP(10)                                               391
532             TDEP(12)=TDEP(11)                                               392
533             ADEP(1)=DEP(1)+0.5*DEP(2)                                       393
534             ADEP(2)=TDEP(1)+0.5*DEP(3)                                      394
535             ADEP(3)=DEP(1)+0.75*DEP(2)+0.25*DEP(3)                          395
536             ADEP(4)=TDEP(3)+0.5*DEP(4)                                      396
537             ADEP(5)=TDEP(4)+0.5*DEP(5)                                      397
538             ADEP(6)=DEP(1)+0.875*DEP(2)+0.625*DEP(3)+0.25*DEP(4)            3
539             ADEP(7)=DEP(1)+(11./12.)*DEP(2)+0.75*DEP(3)+0.5*DEP(4)+
540            1(1./6.)*DEP(5)
541             ADEP(8)=TDEP(7)+0.5*DEP(6)                                      400
542             ADEP(9)=TDEP(8)+0.5*DEP(7)                                      401
543             ADEP(10)=TDEP(9)+0.5*DEP(8)                                     402
544             ADEP(11)=TDEP(7)+(5./6.)*DEP(6)+0.5*DEP(7)+(1./6.)*DEP(8)       403
545             ADEP(12)=DEP(1)+(23./24.)*DEP(2)+(7./8.)*DEP(3)+0.75*DEP(4)+(7./ 404
546            1(12.)*DEP(5)+(5./12.)*DEP(6)+0.25*DEP(7)+(1./12.)*DEP(8)        405
547       C                                                                     406
548       C     CHECK TO PRINT DEPLOYMENTS                                      407
549       C                                                                     408
550             IF (IPRT.EQ.1) GO TO 470                                        409
551             WRITE (6,140) IS(1),ID(1),IS(2),ID(2),IS(1),ID(2),IS(3),ID(3),  410
552            1IS(4),ID(4),IS(1),ID(3)                                         41
553             WRITE (6,150) DEP(1),(TDEP(I),I=1,6)                            412
554             WRITE (6,160) (ADEP(I),I=1,6)                                   413
555             WRITE (6,210) IS(1),ID(4),IS(5),ID(5),IS(6),ID(6),IS(7),ID(7),  414
556            1IS(5),ID(7),IS(1),ID(7)                                         415
557             WRITE (6,180) (TDEP(I),I=7,12)                                  416
558             WRITE (6,160) (ADEP(I),I=7,12)                                  417
559             IA=IA+8                                                         418
560             IF (IA.LE.IAA) GO TO 470                                        419
561             WRITE (6,120) ATITLE,IAP,IAAA
562             IAP=IAP+1
563             WRITE (6,130) WPN                                               421
564             WRITE (6,170) CONC                                              422
565             IA=0                                                            423
566       470   CONTINUE                                                        424
567       C                                                                     425
568       C     READ POSITION CARD - CARD TYPE 3                                426
569       C                                                                     427
```

Figure III.3.11 (Cont.)

```
570             READ (5,70) IC,AMON,IBUS,IM,WEIGHT                              94
571       C*****************************************************************
572       C     THE FOLLOWING STATEMENT READS DATA NECESSARY TO WRITE A TAPE
573       C  (FILE 7) FOR DCSLOG
574       C*****************************************************************
575       480   CONTINUE                                                         429
576             READ(5,75)SSN,LIN
577       75    FORMAT(7(A6,1X))
578             IF (IA.LE.IAA) GO TO 490                                         430
579             WRITE (6,120) ATITLE,IAP,IAAA
580             IAP=IAP+1
581             WRITE (6,130) WPN                                                432
582             WRITE (6,170) CONC                                               433
583             IA=6                                                             434
584       490   CONTINUE                                                         435
585             DO 500 I=1,30                                                    436
586             TOP(I)=0.0                                                       437
587       500   CONTINUE                                                         438
588             ITOT=ITOT+1                                                      439
589             IM=IM+1                                                          440
590       C                                                                      441
591       C     THIS IS THE START OF THE NORMAL METHOD                           442
592       C     READ CARD TYPE 4                                                 443
593       C                                                                      444
594             READ (5,80) IC,FAC,ISCALE                                        445
595             GO TO (510,650), IM                                              446
596       510   DO 520 I=3,9                                                     447
597             FAC(I)=FAC(I)*10.**ISCALE                                        448
598       520   CONTINUE                                                         449
599             DO 521 I=1,7
600             DOR(I,1)=FAC(I+2)
601       521   CONTINUE
602       C                                                                      450
603       C     READ STYLIZED LOSSES CARD TYPE 5                                 451
604       C                                                                      452
605       530   READ (5,90) IC,IT,SLPS,ZERO                                      453
606             IF (IC.EQ.5) GO TO 540                                           454
607       C                                                                      455
608       C     IT IS THE FIRST CARD TYPE 6                                      456
609       C                                                                      457
610             ISC=1                                                            458
611       C                                                                      459
612       C     REREAD IN THE CORRECT FORMAT                                     460
613       C                                                                      461
614             READ (30,100) IC,ISAM,IESD,SE                                    462
615             GO TO 690                                                        463
616       540   DO 560 I=1,30                                                    464
617             TOP(I)=TOP(I)+ZERO*ZE(I,IT)                                      465
618             DO 550 J=1,9                                                     466
619             TOP(I)=TOP(I)+SLPS(J)*(ESL(I,IT,J)+0.5*ESLT(I,IT,J))
620       550   CONTINUE                                                         468
621       560   CONTINUE                                                         469
622             DO 660 I=1,60                                                    470
623             JI=(I-1)/5+1                                                     471
624             DO 570 J=1,9                                                     472
625             A=(ESL(I,IT,J)+0.5*ESLT(I,IT,J))*SLPS(J)
626             GO TO (580,590,600,600,610,610,620,620,630,630,640,640), JI      476
```

Figure III.3.11 (Cont.)

```
627       580   FAC(3)=FAC(3)+A                                                  477
628             DOR(1,J+1)=DOR(1,J+1)+X
629             GO TO 650                                                        478
630       590   FAC(4)=FAC(4)+A                                                  479
631             DOR(2,J+1)=DOR(2,J+1)+X
632             GO TO 650                                                        480
633       600   FAC(5)=FAC(5)+A                                                  481
634             DOR(3,J+1)=DOR(3,J+1)+X
635             GO TO 650                                                        482
636       610   FAC(6)=FAC(6)+A                                                  483
637             DOR(4,J+1)=DOR(4,J+1)+X
638             GO TO 650                                                        484
639       620   FAC(7)=FAC(7)+A                                                  485
640             DOR(5,J+1)=DOR(5,J+1)+X
641             GO TO 650                                                        486
642       630   FAC(8)=FAC(8)+A                                                  487
643             DOR(6,J+1)=DOR(6,J+1)+X
644             GO TO 650                                                        488
645       640   FAC(9)=FAC(9)+A                                                  489
646             DOR(7,J+1)=DOR(7,J+1)+X
647       650   CONTINUE
648       570   CONTINUE
649       600   CONTINUE                                                         496
650             DO 670 J=1,7                                                     49
651             J2=J+2                                                           491
652             DO 660 K=1,4                                                     492
653             FAC(J2)=FAC(J2)+ZZE(J,K,IT)*ZERO                                 493
654             DOR(J,K+5)=DOR(J,K+5)+ZZE(J,K,IT)*ZERO
655       660   CONTINUE                                                         494
656       670   CONTINUE                                                         495
657             GO TO 530                                                        497
658       690   ISVEC(ISC)=ISAM                                                  498
659             JEVEC(ISC)=IESO                                                  499
660             DO 700 I=1,4                                                     500
661             SEVEC(I,ISC)=SE(I)                                               501
662       700   CONTINUE                                                         502
663       C                                                                      503
664       C     IF IC IS 99 - GO COMPUTE                                         504
665       C                                                                      505
666             IF (IC.EQ.99) GO TO 710                                          506
667             READ (5,100) IC,ISAM,IESO,SE                                     507
668             ISC=ISC+1                                                        508
669             GO TO 690                                                        509
670       C                                                                      510
671       C     COMPUTE HERE                                                     511
672       C                                                                      512
673       710   DO 770 I=1,7                                                     513
674             ISI=IS(I)                                                        514
675             IDI=ID(I)                                                        515
676             DO 760 J=ISI,IDI                                                 516
677             JT=.9+FLOAT(J)/3.
678             X=0.                                                             518
679             DO 740 K=1,ISC                                                   519
680             JK=JEVEC(K)                                                      520
681             IF(JK.EQ.0)GO TO 740
682             IF (ISVEC(K).EQ.999) GO TO 720                                   521
683             IF (ISVEC(K).NE.JEVEC(K)) GO TO 740                              522
```

Figure III.3.11 (Cont.)

```
      740   DO 730 L=1,4
            X=X+SEVEC(L,K)*ESD(J,JK,L)
            DOR(I,L+4)=DOR(I,L+4)+SEVEC(L,K)*ESD(J,JK,L)
      730   CONTINUE
      740   CONTINUE
            IF (I.GE.5) GO TO 750
            TDP(JT)=TDP(JT)+X
      750   FAC(I+2)=FAC(I+2)+X
      760   CONTINUE
      770   CONTINUE
            DO 810 I=1,30
      800   STDP(I)=STDP(I)+(TDP(I)*.005)
            TDP(I)=TDP(I)+(STDP(I)*FAC(2))
            TDP(I)=TDP(I)*(1.+FAC(I))
      810   CONTINUE
      C
      C     WRITE OUT THE THREE-DAY PILES
      C
            WRITE  (2,130) WPN
            WRITE  (2,170) AMUN
            WRITE  (2,190) (III(I),I=1,20),(TDP(I),I=1,10)
            WRITE  (2,190) (III(I),I=21,40),(TDP(I),I=11,20)
            WRITE  (2,190) (III(I),I=41,60),(TDP(I),I=21,30)
            IB=IB+6
            IF (IB.LE.188) GO TO 820
            WRITE  (2,120) DTITLE,IBP,IBBB
            IBP=IBP+1
            IB=4
      820   CONTINUE
      C
      C     ADD ON SEA LOSSES
      C
            DO 830 I=1,7
            SFAC(I+2)=SFAC(I+2)+(FAC(I+2)*.005)
            FAC(I+2)=FAC(I+2)+(SFAC(I+2)*FAC(2))
            DOR(I,14)=DOR(I,14)+(SFAC(I+2)*FAC(2))
            DOR(I,15)=DOR(I,15)+FAC(I+2)*FAC(1)
            FAC(I+2)=FAC(I+2)*(1.+FAC(1))
            DOR(I,16)=DOR(I,16)+FAC(I+2)*SEALOS(I)
            FAC(I+2)=FAC(I+2)*(1.+SEALOS(I))
      830   CONTINUE
      840   ROUND(1)=FAC(3)
            ROUND(2)=FAC(4)
            ROUND(3)=FAC(3)+FAC(4)
            ROUND(4)=FAC(5)
            ROUND(5)=FAC(6)
            ROUND(6)=ROUND(3)+FAC(5)
            ROUND(7)=ROUND(3)+FAC(5)+FAC(6)
            ROUND(8)=FAC(7)
            ROUND(9)=FAC(8)
            ROUND(10)=FAC(9)
            ROUND(11)=FAC(7)+FAC(8)+FAC(9)
            ROUND(12)=ROUND(7)+ROUND(11)
            GO TO 860
      C
      C     START THE SECOND METHOD
      C
```

Figure III.3.11 (Cont.)

```
      850   FAC(3)=FAC(3)*ADEP(1)*DAYS(1)                                     576
            FAC(4)=FAC(4)*ADEP(2)*DAYS(2)                                     577
            FAC(5)=FAC(5)*ADEP(4)*DAYS(4)                                     578
            FAC(6)=FAC(6)*ADEP(5)*DAYS(5)                                     579
            FAC(7)=FAC(7)*ADEP(8)*DAYS(8)                                     580
            FAC(8)=FAC(8)*ADEP(9)*DAYS(9)                                     581
            FAC(9)=FAC(9)*ADEP(10)*DAYS(10)                                   582
            READ(5,100)IC                                                     583
            GO TO 890                                                         584
C                                                                             585
C     COMPUTE THE RATES                                                       586
C                                                                             587
      860   DO 870 I=1,12                                                     588
            IF(ADEP(I).LE.0.0)ADEP(I)=1E-20                                   589
            SROUND(I)=SROUND(I)+ROUND(I)                                      590
            RATE(I)=ROUND(I)/(ADEP(I)*DAYS(I))                                591
            TONS(I)=ROUND(I)*WEIGHT/2000.0
            STONS(I)=STONS(I)+TONS(I)
            IF(TONS(I).GT.1E12)GO TO 870
            TSTONS(I)=TSTONS(I)+TONS(I)
      870   CONTINUE                                                          592
C                                                                             593
C     PRINT THE RESULTS                                                       594
C                                                                             595
C*************************************************************
C        THE FOLLOWING STATEMENTS HAVE BEEN INSERTED TO WRITE A
C     TAPE (FILE 7) FOR DCSLOG.
C
            RATLOG(1)=RATE(1)
            RATLOG(2)=RATE(2)
            RATLOG(3)=RATE(4)
            RATLOG(4)=RATE(4)
            RATLOG(5)=RATE(5)
            RATLOG(6)=RATE(5)
            RATLOG(7)=RATE(6)
            RATLOG(8)=RATE(8)
            RATLOG(9)=RATE(9)
            RATLOG(10)=RATE(9)
            RATLOG(11)=RATE(10)
            RATLOG(12)=RATE(10)
            WRITE(7,71)SSN,WPN,AMUN
      71    FORMAT(///'SSN   ',A6,6A,10A4/17A,5A6//)
            KOUNT=0
            DO 8720 I=1,6
            IF(LIN(I).EQ.(6H       ))GO TO 8721
            KOUNT=KOUNT+1
      8720  CONTINUE
      8721  CONTINUE
            WRITE(7,72)(LIN(I),I=1,KOUNT)
      72    FORMAT(' CAA FACTORS',6(5X,A6),/)
            DO 8722 I=1,12
            WRITE(7,73)I,(RATLOG(I),J=1,KOUNT)
      73    FORMAT('ENROPE=',I2,7X,6(F8.3,3A))
      8722  CONTINUE
C
C
C*************************************************************
```

Figure III.3.11 (Cont.)

```
      C
      C
            DO 871 I=1,12
            IF(RATE(I).LT..01.AND.ROUND(I).GT.0.0)GO TO 872
      871   CONTINUE
            WRITE (6,200) AMUN                                              596
            WRITE (6,210) IS(1),ID(1),IS(2),ID(2),IS(1),ID(2),IS(3),ID(3),  597
           1IS(4),ID(4),IS(1),ID(3)                                         598
            WRITE (6,220) (ROUND(I),I=1,6)                                  599
            WRITE (6,221) (TONS(I),I=1,6)                                   59
            WRITE (6,230) (RATE(I),I=1,6)                                   600
            WRITE (6,210) IS(1),ID(4),IS(5),ID(5),IS(6),ID(6),IS(7),ID(7),  601
           1IS(5),ID(7),IS(1),ID(7)                                         602
            WRITE (6,220) (ROUND(I),I=7,12)                                 603
            WRITE (6,221) (TONS(I),I=7,12)                                  60
            WRITE (6,230) (RATE(I),I=7,12)                                  604
            IA=IA+12                                                        60
            GO TO 873
      872   WRITE (6,200) AMUN                                              59
            WRITE (6,210) IS(1),ID(1),IS(2),ID(2),IS(1),ID(2),IS(3),ID(3),  597
           1IS(4),ID(4),IS(1),ID(3)                                         598
            WRITE (6,220) (ROUND(I),I=1,6)                                  599
            WRITE (6,221) (TONS(I),I=1,6)                                   59
            WRITE (6,235) (RATE(I),I=1,6)                                   60
            WRITE (6,210) IS(1),ID(4),IS(5),ID(5),IS(6),ID(6),IS(7),ID(7),  601
           1IS(5),ID(7),IS(1),ID(7)                                         602
            WRITE (6,220) (ROUND(I),I=7,12)                                 603
            WRITE (6,221) (TONS(I),I=7,12)                                  60
            WRITE (6,235) (RATE(I),I=7,12)                                  60
            IA=IA+12                                                        60
      C                                                                     606
      C     SUM AND PRINT DOR
      C
      873   IF(IE.LE.ICC)GO TO 879
            WRITE  (3,120)CTITLE,ICP,ICCC
            ICP=ICP+1
            IE=4
      879   DO 875 I=1,7
            DO 874 J=1,16
            DOR(I,17)=DOR(I,17)+DOR(I,J)
      874   CONTINUE
      875   CONTINUE
            WRITE  (3,130)WPN
            WRITE  (3,200)AMUN
            WRITE  (3,242)(IS(I),ID(I),I=1,7)
            DO 876 J=1,17
            WRITE  (3,241) STIM(J),(DOR(I,J),I=1,7)
      876   CONTINUE
            DO 878 I=1,7
            DO 877 J=1,17
            DOR(I,J)=0.0
      877   CONTINUE
      878   CONTINUE
            IE=IE+20
      C     READ THE NEXT CARD TO SEE IF IT IS A WEAPON CARD                607
      C                                                                     608
            READ (5,50) IC
```

Figure III.3.11 (Cont.)

```
      IF (IC.EQ.1.OR.IC.EQ.99) GO TO 880
      IF (IC.NE.3) STOP
C
C     IT IS A MUNITIONS CARD
C
      READ (30,70) IC,AMUN,IBUS,IM,WEIGHT
      GO TO 980
880   IF (ITOT.LE.1.AND.IC.EQ.99) GO TO 920
      IF (ITOT.LE.1) GO TO 910
C     PRINT THE TOTALS
      IF (IA.LE.IAA) GO TO 890
      WRITE (6,120) ATITLE,IAP,IAAA
      IAP=IAP+1
      WRITE (6,130) WPN
      WRITE (6,170) CONC
      IA=0
890   CONTINUE
      DO 900 I=1,12
      RATE(I)=SROUND(I)/(ADEP(I)*DAYS(I))
900   CONTINUE
      WRITE (6,240) TOTAL
      WRITE (6,210) IS(1),ID(1),IS(2),ID(2),IS(1),ID(2),IS(3),ID(3),
     1IS(4),ID(4),IS(1),ID(3)
      WRITE (6,220) (SROUND(I),I=1,6)
      WRITE (6,221) (STONS(I),I=1,6)
      WRITE (6,230) (RATE(I),I=1,6)
      WRITE (6,210) IS(1),ID(4),IS(5),ID(5),IS(6),ID(6),IS(7),ID(7),
     1IS(5),ID(7),IS(1),ID(7)
      WRITE (6,220) (SROUND(I),I=7,12)
      WRITE (6,221) (STONS(I),I=7,12)
      WRITE (6,230) (RATE(I),I=7,12)
      IF(IC.EQ.99) GO TO 920
      IA=IA+10
      IF (IA.LE.IAA) GO TO 910
      WRITE (6,120) ATITLE,IAP,IAAA
      IAP=IAP+1
      IA=4
910   READ(30,50)IC,WPN
      GO TO 920
 920  WRITE (6,223)
      WRITE (6,210) IS(1),ID(1),IS(2),ID(2),IS(1),ID(2),IS(3),ID(3),
     1IS(4),ID(4),IS(1),ID(3)
      WRITE (6,224) (ISTONS(I),I=1,6)
      WRITE (6,210) IS(1),ID(4),IS(5),ID(5),IS(6),ID(6),IS(7),ID(7),
     1IS(5),ID(7),IS(1),ID(7)
      WRITE (6,222) (ISTONS(I),I=7,12)
      END FILE 2
      END FILE 3
      REWIND 2
      REWIND 3
      WRITE(6,243)
930   READ(2,244,END=940)EDIT
      WRITE(6,244)EDIT
      GO TO 930
940   WRITE(6,243)
950   READ(3,244,END=960)EDIT
      WRITE(6,244)EDIT
      GO TO 950
960   STOP
      END
```

Figure III.3.11 (Cont.)

Appendix A

References

A. COSAGE Data Requirements Document, 1st Ed, USACAA, Documentation CAA-D-80-8, dated 1 Jun 80.

B. Wartime Requirements for Ammunition, Materiel and Personnel (WARRAMP) Five-year Master Plan, CAA Memorandum, 12 October 1979.

C. Wartime Requirements for Ammunition, Materiel and Personnel (WARRAMP) Analytical Methodology, Technical Paper, CAA-TP-78-4, USACAA, dated August 1978.

D. Equipment Loss Consolidator (ELCON) Methodology, Documentation, CAA-D-79-3, USACAA, dated August 1979.

E. The Forewon Force-Planning System, Appendix C, User's Guide for Force Analysis Simulation of Theater Administrative and Logistic Support (FASTALS), Documentation, Research Analysis Corporation, RAC-R-86, dated May 1971.

F. Army Automation, Documentation Standards for Development and Maintenance of computer Software Memorandum, USACAA, CAA Memorandum 18-2, dated 26 October 1979.

G. Army Automation, Software Design and Development, HQDA, TB 18-103, dated January 1980.

H. Army Automation, Technical Documentation, HQDA, TB 18-111 dated January 1979.

I. Automated Data Systems Documentation Standards, Department of Defense, DOD Standard 7935.1-S, dated 13 September 1977.

J. System for Estimating Materiel Wartime Attrition and Replacement Requirements (SYMWAR), Vols I and II, RAC-TP-404, Sep 70 and Jan 71, respectively (on file at DDC).

K. Selected Analysis of 1972-1973 Equipment Attrition Factors, Vols I and II, ODCSLOG, 11 Apr 73.

L. An Analysis of Methods for Determining Wartime Materiel Requirements, Phase I, Vols I and II, CAA, Jun 73.

M. Wartime Active Replacements Factors (WARF), Phase II, System Design, CAA, Jan 74.

N. Wartime Replacement Factors--FY 80 (WARF-80), CAA (CAA-SR-75-9), Jul 75.

O. Wartime Replacement Factors (WARF) Systems Documentation, CAA, Apr 76.

P. Wartime Replacement Factors--FY 78-82 (WARF 78-82), Vol II, Main Report, CAA (CAA-SR-78-13), Oct 78.

Q. Wartime Requirements for Ammunition and Materiel, Fy 81-85. (AMMO P-85/WARF-85), Vol. I, Main Report, CAA (CAA-SR-79-1), Feb 79.

R. Wartime Requirements for Ammunition and Materiel, FY 82-86 (AMMO P-86/WARF-85), Vol I, Main Report, CAA.

S. SIMSCRIPT II.5 Programming Language, Kiviat, et.al; edited by E.C. Russell, 1975, CACI, Inc., 12011 San Vicente Blvd, Los Angeles, CA 90049

T. SIMSCRIPT II.5 Reference Handbook, 1976, CACI, Inc., 12011 San Vicente Blvd, Los Angeles, CA 90049

U. SIMSCRIPT II.5 User's Manual - UNIVAC 1100 Series Computer Systems 1977, CACI, Inc., 12011 San Vicente Blvd, Los Angeles, CA 90049.

V. Target Acquisition Model, USACAA, Documentation CAA-D-74-2, dated December 1974.

W. Red Artillery Model, USACAA, Documentation CAA-D-74-2, dated December 1974.

X. Sperry UNIVAC 1100 Series Executive System Programmer Reference Manual, Volumes 1 - 4, UP 4144.1 through UP 4144.4, 1975 Sperry Rand Corporation, with updates.

Y. Force Analysis Simulation of Theater Administrative and Logistics Support Model (FASTALS), prepared for the U.S. Army Logistics Center by Computer Sciences Corporation, April 1980, Contract GS-045-22715.

Z. THEATER RATES MODEL, Documentation CAA-D-7409, War Gaming Directoriate, USACAA, dated December 1974.

AA. HELICOPTER ANTI-ARMOR MODEL, Documentation, CAA-D-74-8, War Gaming Directoriate, USACAA, dated December 1974.

BB. QWICK QWERY User's Manual, 1973, CACI, Inc., 12011 San Vincente Blvd, Los Angeles, CA 90049

Appendix B

Terms and Abbreviations

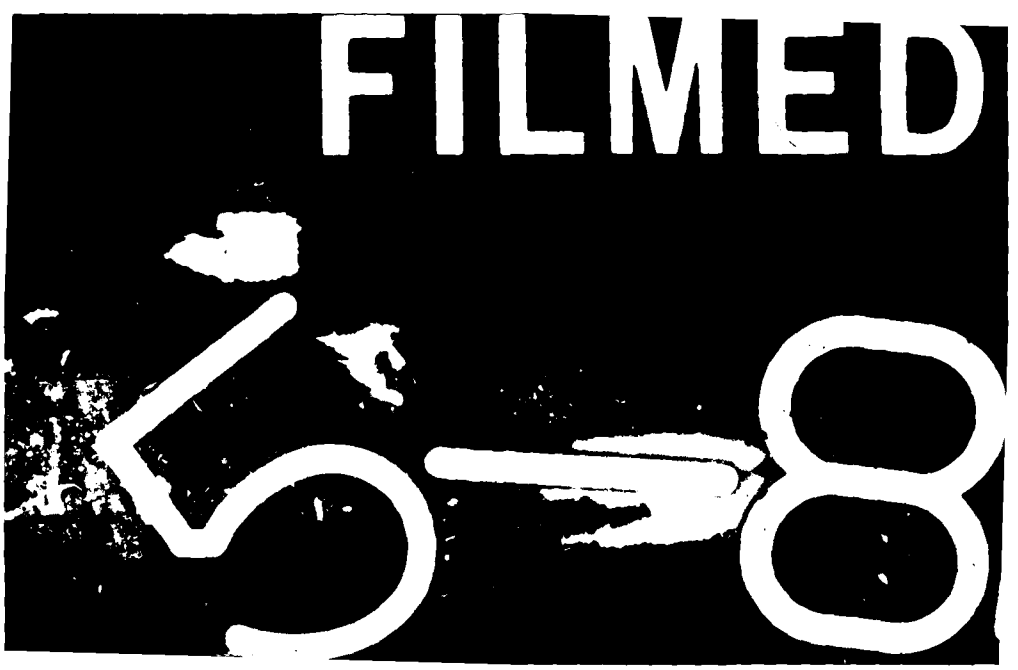
APP	Ammunition Post Processor - A related group of computer software programs that is a part of the WARRAMP methodology; used to compute the expected consumption of ammunition of selected calibres of a force in a conflict.
CEM	Concepts Evaluation Model - A low resolution theater combat model that simulates the combat between two opponent forces over a specific period of time producing force results.
COSAGE	Combat Sample Generator, a high resolution model that simulates tactical combat between a red and blue force; a production model that produces force on force results.
ELCON	Equipment Loss Consolidator.
ESD	Equivalent Stylized Day of (Wartime) combat between a postured blue and red force; used to provide an activity comparison between forces.
HMS	Heavy Materiel Supply Units (Companies).
ITMID	Item Identification File.
K-KILL	A catastrophic kill of the item (target) rendering it incapable of returning fire or movement and is non-repairable.
LA	Lethal area of indirect fire (area type) weapon systems.
LEA	Logistics Evaluation Agency.
LIN	Line Item Number (Code) - LINCODE.
LOC	Lines of Communications.
MIE	Major items of equipment.
M-KILL	A hit on an item (target) that renders it immobile, but repairable and capable of returning fire.
ODCSOPS	Office of the Deputy Chief of Staff (Army) for Operations.
PK	Probability of Kill.
RAM	Red Artillery Model.
RTD	Returned To Duty; personnel or repaired equipment.

SSPK	Single Shot Probability of Kill.
SRC	Standard Requirements Code.
TAM	Target Acquisition Model.
TOE	Table of Organization and Equipment.
TRCONS	Theater Rate Consolidation data file.
TRMAP	Theater Rate Mapping data file.
TRM	Theater Rates Model, used to simulate a theater conflict, generating stylized combat periods; used to compute ammunition consumption rates for several weapon - munition combinations.
WARF	Wartime Replacement Factors, also known as Wartime Active Replacement Factors. Rates of loss or specified periods or time increments for selected combat materiel items.
WIMP	WARF Intermediate Materiel Processor.

Appendix C
Distribution

Addressee	Copies
Defense Documentation Center for Scientific and Technical Information building 5 Cameron Station, Alexandria, VA 22314	3
The Army Central Library (ASDIRS) Room 1A600 Pentagon Building Washington, DC 20310	1
Ballistics Research Laboratory Technical Library Building 305 Aberdeen Proving Ground Aberdeen, MD 21005	1
Deputy Under Secretary of the Army (Operations Research) HQDA, Room 2E621 Pentagon Building Washington, DC 20310	1
Department of the Army Office of the Deputy Chief of Staff for Research, Development & Acquisition Pentagon Building Washington, DC 20310	1
Deputy Chief of Staff for Operations and Plans (DAMP-ZD) Room 3A538 Pentagon Building Washington, DC 20310	1
Director of Army Automation Office of the Chief of Staff, Army Pentagon Building Washington, DC 20310	1
Commander Army Materiel Systems Analysis Agency (DRSXY) Aberdeen Proving Ground Aberdeen, Maryland 21005	1

DODCI Technical Library Washington Navy Yard Building 175, Room 37 Washington, DC 20374	1
Commandant Naval Post Graduate School P.O. Box 8692 ATTN: Chief TRM Monterrey, California 93940	1
Commander US Army Training and Doctrine Command (TRADOC) Fort Monroe, Virginia 23651	1
Commandant US Army Field Artillery School (USAFAS) ATTN: Library Ft. Sill, Oklahoma 73503	1
Commandant US Army Combined Arms Combat Development Activity (CACDA) ATTN: Library Ft. Leavenworth, Kansas 66027	1
Commander US Army Concepts Analysis Agency ATTN: Library 8120 Woodmont Avenue Bethesda, Maryland 20814	1
Local	
Chief, PP	1
Director, FD	1
Director, JF	1
Director, SM	1
Director, MC	3
Director, RQ	15


FILMED
5-8